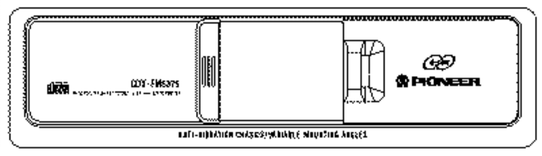
Service Manual

PIONEER®
The Art of Entertainment

CDX-FM637S/X1N/EW



ORDER NO.
CRT2091

UNIVERSAL MULTI-CD SYSTEM

CDX-FM637S X1N/EW
CDX-FM637S X1N/ES

COMPACT disc DIGITAL AUDIO

- **See the separate manual CX-652(CRT1857) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of C5 series.**

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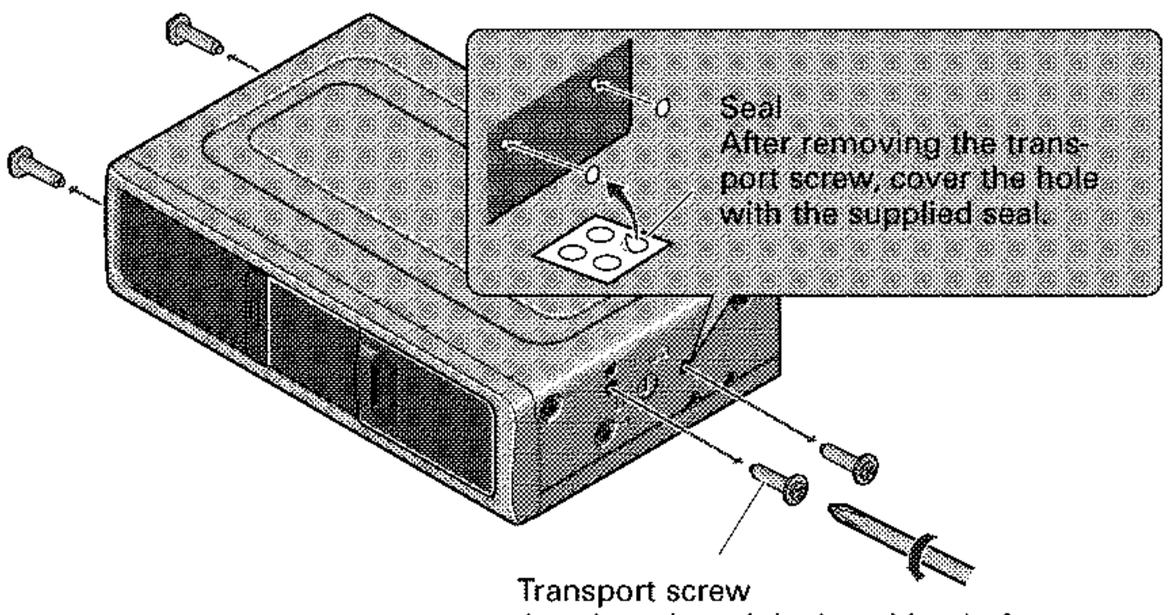
MC-Service

● CD Player Service Precautions

1. For pickup unit(Service)(CXX1235) handling, please refer to"Disassembly"(CX-652 Service Manual CRT1857).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the pickup unit(See page 45).
4. Since these screws protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.



Transport screw
Attach to the original position before transporting the set.

A transport screw has been attached to the set in order to protect it during transportation. After removing the transport screw, cover the hole with the supplied seal.
Be sure to remove the transport screw before mounting the set. The removed transport screw should be retained in the accessory bag for use the next time the set is transported.

1. SAFETY INFORMATION

1.1 CDX-FM637S/X1N/EW

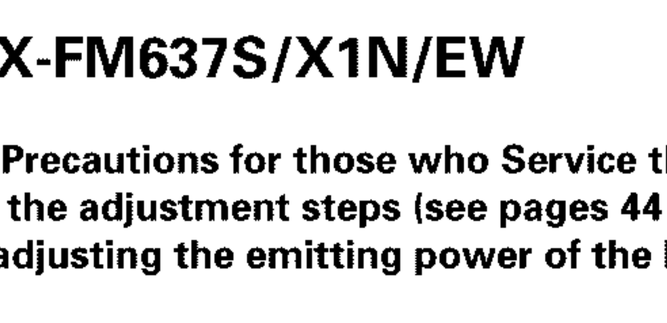
1. Safety Precautions for those who Service this Unit.

- **Follow the adjustment steps (see pages 44 through 49)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

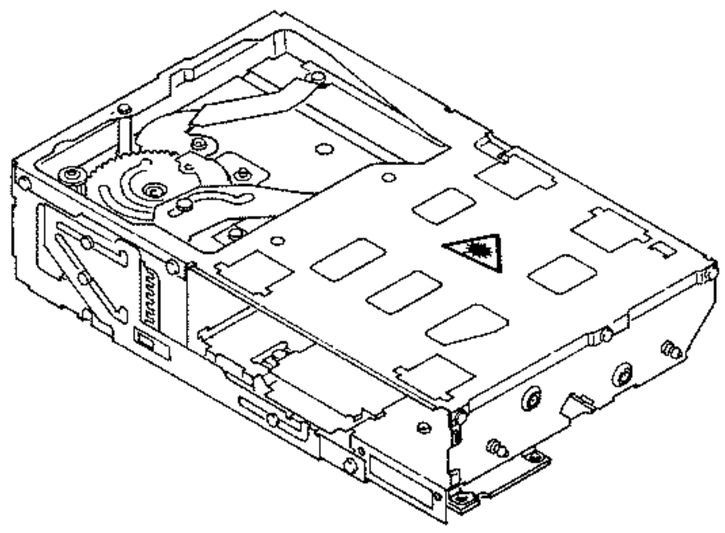
Caution:

1. **During repair or tests, minimum distance of 13cm from the focus lens must be kept.**
2. **During repair or tests, do not view laser beam for 10 seconds or longer.**

2. A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.



3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

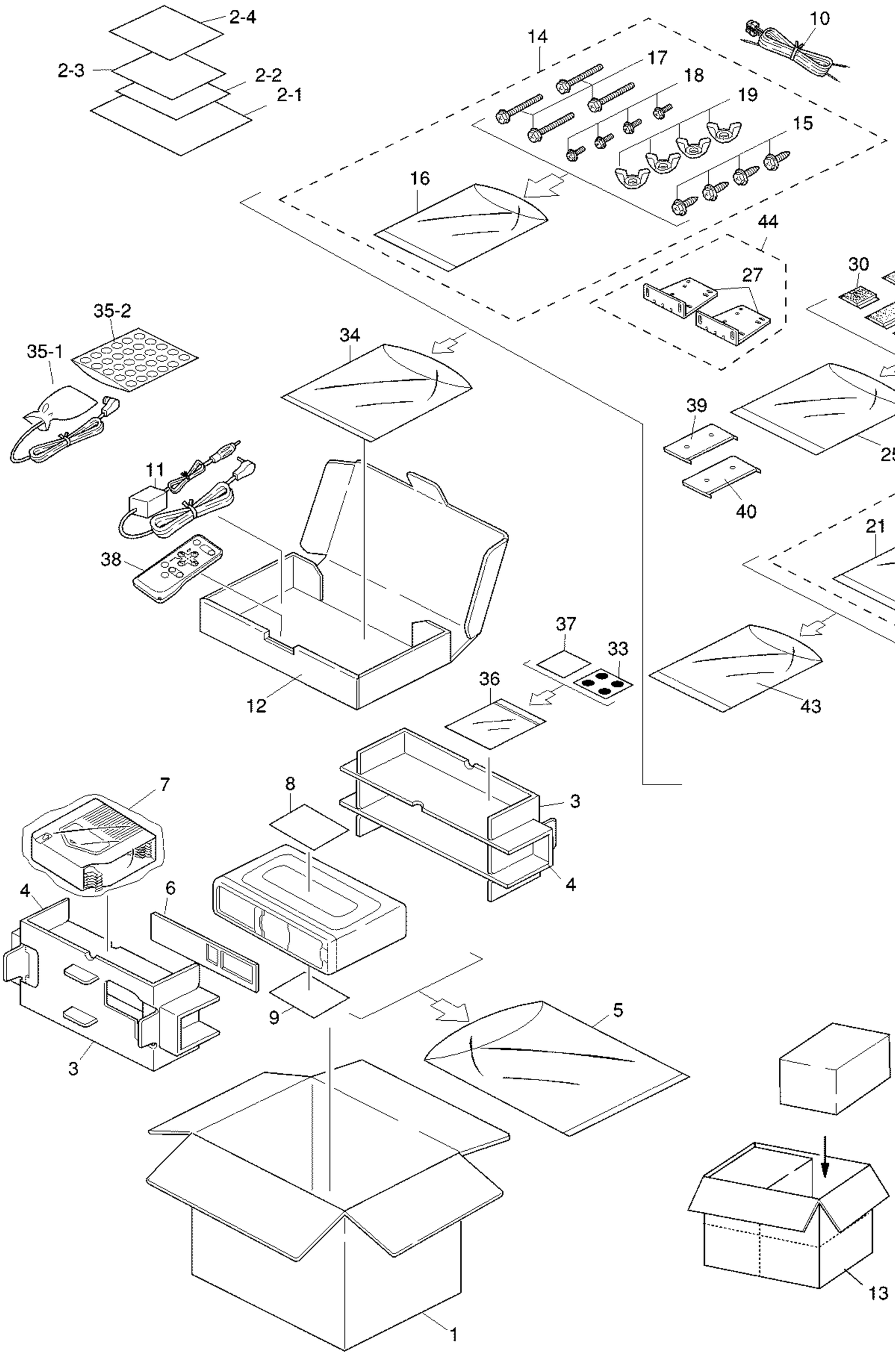


Fig. 1

NOTE:

- Parts marked by "*"are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No. CDX-FM637S/X1N/EW	Part No. CDX-FM637S/X1N/ES
	1	Carton	CHG3400	CHG3401
	2-1	Owner's Manual	CRD2519	CRD2517
	2-2	Owner's Manual	CRD2520	Not used
	2-3	Installation Manual	CRD2521	CRD2518
*	2-4	Warranty Card	CRY1087	Not used
	3	Protector	CHP1820	CHP1820
	4	Protector	CHP1817	CHP1817
	5	Polyethylene Bag	CEG1042	CEG1042
	6	Spacer	CHW1528	CHW1528
	7	Magazine Assy	CXA9156	CXA9156
*	8	Caution Card	CRP1164	CRP1164
*	9	Caution Card	CRP1165	CRP1165
	10	Cord	CDE5125	CDE5124
	11	Antenna Select Assy	CWM5606	CWM5606
	12	Sub Carton	CHG3402	CHG3403
	13	Contain Box	CHL3400	CHL3401
	14	Screw Assy	CEA1962	CEA1962
	15	Screw	CBA1295	CBA1295
*	16	Polyethylene Sheet	CNM5158	CNM5158
	17	Screw	HMB60P500FMC	HMB60P500FMC
	18	Screw	HMF40P080FZK	HMF40P080FZK
	19	Nut	NF60FMC	NF60FMC
	20	Screw Assy	CEA1964	CEA1965
*	21	Polyethylene Bag	CEG-127	CEG-127
	22	Screw	BPZ30P050FZK	IMS30P050FZK
	23	Spring	Not used	CBH-865
	24	Clamper	CEF1010	CEF1010
*	25	Polyethylene Bag	CEG-158	CEG-158
	26	Battery	CEX1030	CEX1030
	27	Angle	CNB2019	CNB2019
	28-1	Bracket	Not used	CNS3313
	28-2	Bracket	Not used	CNC5116
	28-3	Cushion	Not used	CNM3182
	29	•••••		
	30	•••••		
	31	Fastener(Soft)	CNM3872	CNM3872
	32	Fastener(Rough)	CNM4041	CNM4041
	33	Seal	CNM5599	CNM5599
*	34	Polyethylene Bag	E36-622	E36-622
	35-1	Cover	CEG1062	CEG1062
	35-2	Air Cushioned Bag	CEG1055	CEG1055
*	36	Polyethylene Bag	CEG1099	CEG1099
*	37	Caution Card	CRP1090	CRP1090
	38	Remote Control Unit	CXB2053	CXB2053
	39	Bracket(Small)	CNC5114	Not used
	40	Bracket(Large)	CNC5115	Not used
	41	Screw	BNC40P120FZK	Not used
	42	Screw	BMZ40P060FZK	Not used
*	43	Polyethylene Bag	Not used	CEG-158
	44	Angle Assy	CXA9655	CXA9655
	45	Washer	WG40FZK	Not used

● Owner's Manual

Model	Part No.	Language
CDX-FM637S/X1N/EW	CRD2519	English, Italian, French
	CRD2520	German, Dutch, Spanish
CDX-FM637S/X1N/ES	CRD2517	English, Spanish, Portuguese, Arabic

● Installation Manual

Model	Part No.	Language
CDX-FM637S/X1N/EW	CRD2521	English, Italian, French,German, Dutch, Spanish
CDX-FM637S/X1N/ES	CRD2518	English, Spanish, Portuguese, Arabic

2.2 EXTERIOR

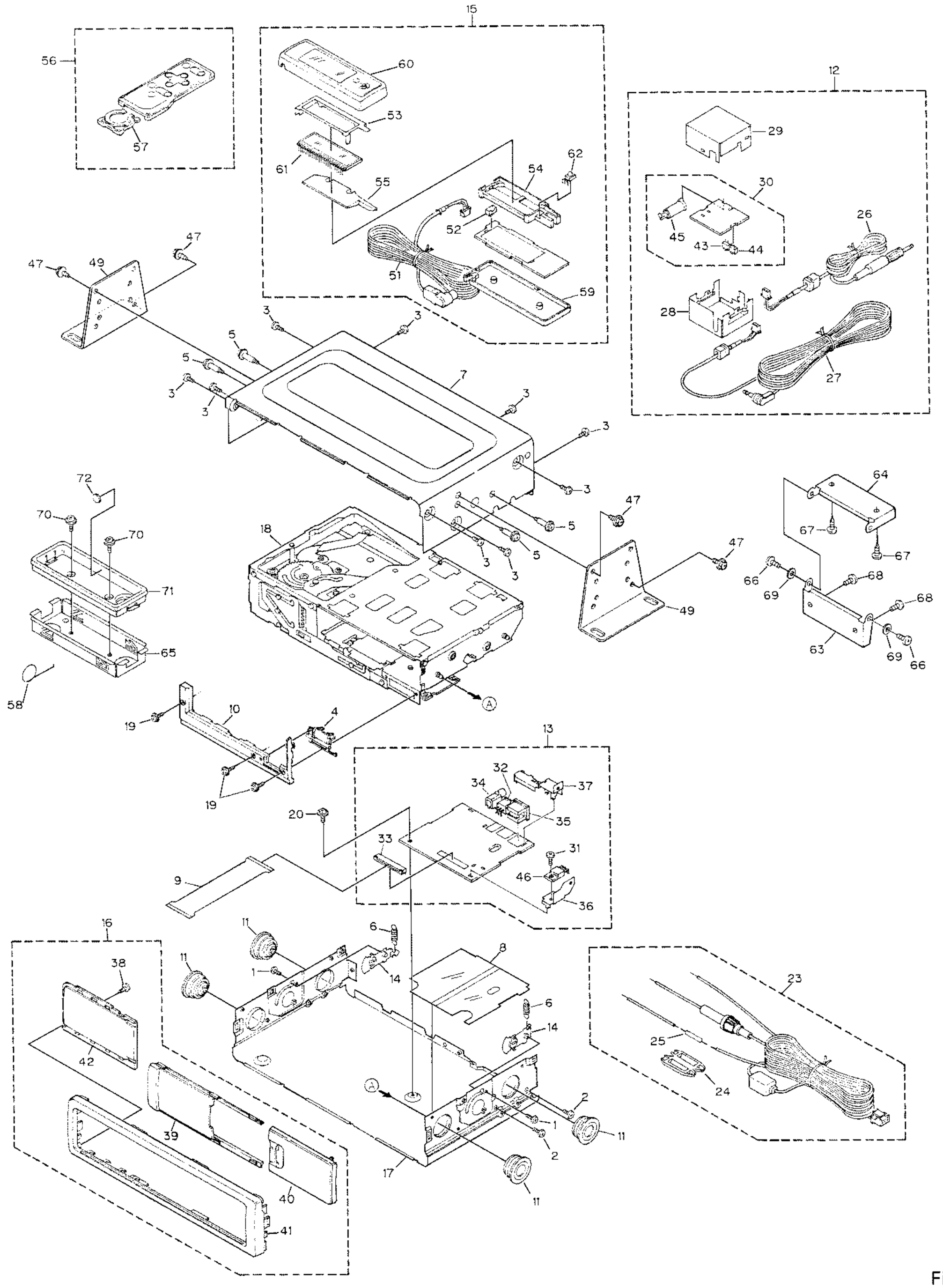


Fig. 2

(1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BMZ20P040FMC
2	Screw	BMZ26P040FMC
3	Screw	BMZ30P040FZK
4	Button	CAC4632
5	Screw	CBA1352
6	Spring	CBH1859
7	Upper Case	CNB2078
8	Insulator	CNM4640
9	PCB	CNP4972
10	Panel	CNS3867
11	Damper	CNV4501
12	Antenna Select Assy	CWM5606
13	System Unit	See Contrast table(2)
14	Arm Unit	CXA8606
15	Display Assy	See Contrast table(2)
16	Grille Assy	CXB2081
17	Lower Case Unit	CXA9322
18	CD Mechanism Module(C5)	CXK4430
19	Screw	IMS20P035FZK
20	Screw	IMS26P040FMC
21	•••••	
22	•••••	
23	Cord	See Contrast table(2)
24	Cap	CNS1472
25	Resistor	RS1/2PMF102J
26	Antenna Cable	CDH1207
27	Cord	CDE5482
28	Chassis	CNA1555
29	Case	CNB1764
30	Antenna Select Unit	CWX2200
31	Screw	BMZ26P060FMC
32	Plug(CN801)	CKS-460
33	Connector(CN201)	CKS2233
34	Jack(CN401)	CKS2310
35	Connector(CN601)	CKS3195
36	Holder	CNC6313
37	Holder	CNC6339
38	Screw	BPZ26P080FMC
39	Door	CAT1919
40	Door	CAT1908

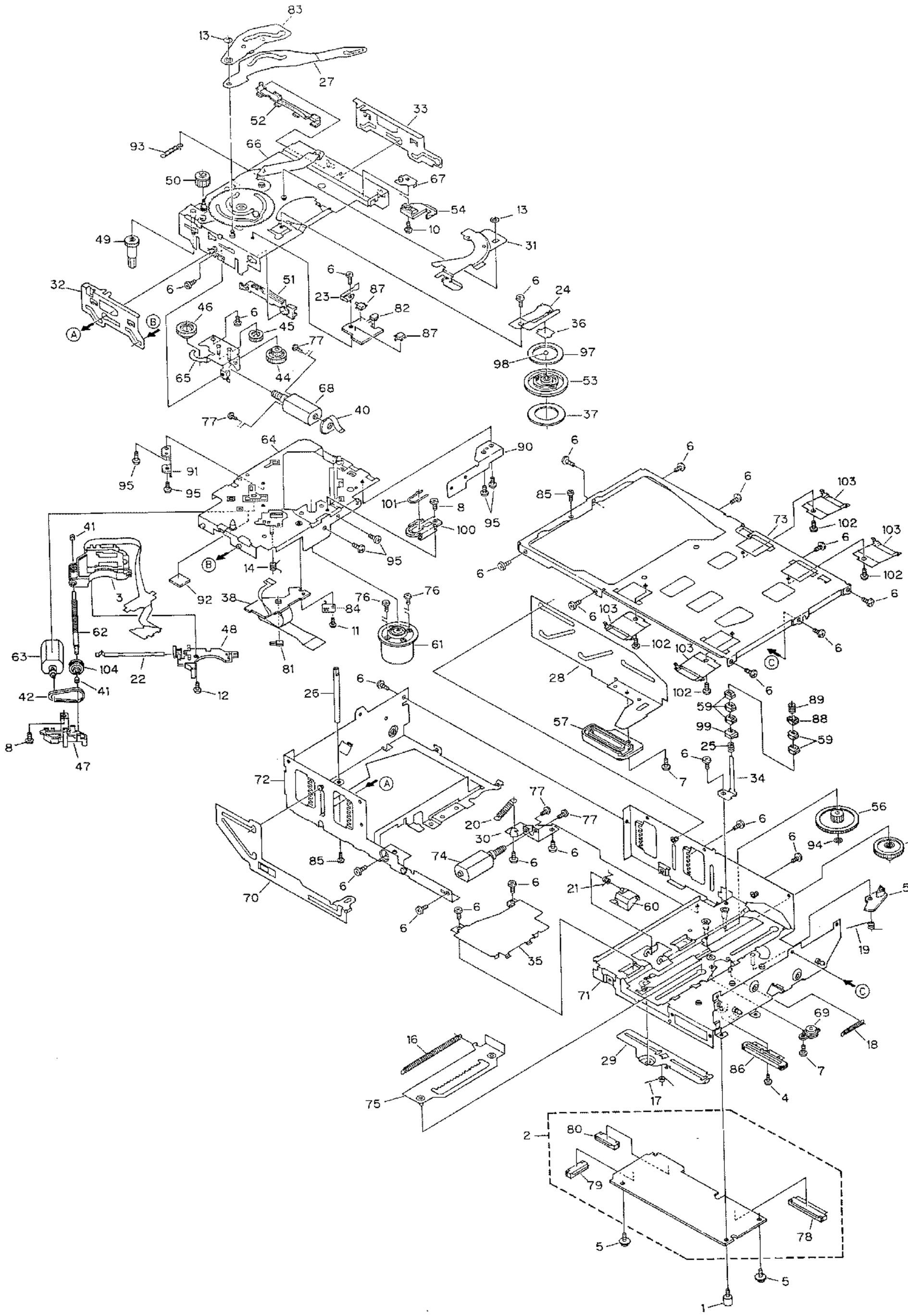
Mark No.	Description	Part No.
41	Grille	CNS4715
42	Panel	CNS4749
43	Plug(CN502)(White)	CKS1222
44	Plug(CN501)(Red)	CKS2812
45	Antenna Jack(CN503)	CKX1006
46	Transistor(Q801)	2SD2396
47	Screw	HMF40P080FZK
48	•••••	
49	Angle	CNB2019
50	•••••	
51	Cord	CDE5480
52	Plug(CN901)	CKS-785
53	Holder	CNC5621
54	Housing	CNV4019
55	Lens	CNV4020
56	Remote Control Unit	CXB2053
57	Cover	CNS4139
58	Spring	See Contrast table(2)
59	Case	CNS3279
60	Grille Unit	See Contrast table(2)
61	LCD(LCD901)	CAW1273
62	IC(IC902)	SBX8035-H
63	Bracket	See Contrast table(2)
64	Bracket	See Contrast table(2)
65	Bracket	See Contrast table(2)
66	Screw	See Contrast table(2)
67	Screw	See Contrast table(2)
68	Screw	See Contrast table(2)
69	Washer	See Contrast table(2)
70	Screw	See Contrast table(2)
71	Bracket	See Contrast table(2)
72	Cushion	See Contrast table(2)

(2) CONTRAST TABLE

CDX-FM637S/X1N/EW and CDX-FM637S/X1N/ES are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.	
		CDX-FM637S/X1N/EW	CDX-FM637S/X1N/ES
13	System Unit	CWX2199	CWX2198
15	Display Assy	CXB1904	CXB1903
23	Cord	CDE5125	CDE5124
58	Spring	Not used	CBH-865
60	Grille Unit	CXB2043	CXB2044
63	Bracket	CNC5114	Not used
64	Bracket	CNC5115	Not used
65	Bracket	Not used	CNC5116
66	Screw	BMZ40P060FZK	Not used
67	Screw	BNC40P120FZK	Not used
68	Screw	BPZ30P050FZK	Not used
69	Washer	WG40FZK	Not used
70	Screw	Not used	IMS30P050FZK
71	Bracket	Not used	CNS3313
72	Cushion	Not used	CNM3182

2.3 CD MECHANISM MODULE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● CD MECHANISM MODULE SECTION PARTS LIST

	Mark	No.	Description	Part No.
		1	Screw	CBA1369
		2	CD Core Unit	CWX2175
		3	Pickup Unit(Service)	CXX1235
		4	Screw	JFZ17P020FNI
		5	Screw	IMS26P040FMC
		6	Screw(M2×2.5)	CBA1037
		7	Screw(M2×2.5)	CBA1077
		8	Screw(M2×2.5)	CBA1085
		9	Screw(M2×6)	CBA1229
		10	Screw(M2×4)	CBA1176
		11	Screw(M2×6)	CBA1166
		12	Screw(M2×4)	CBA1362
		13	Washer	CBF1002
		14	Spring	CBH1822
		15	•••••	
		16	Spring	CBH1826
		17	Spring	CBH1827
		18	Spring	CBH1828
		19	Spring	CBH1829
		20	Spring	CBH1830
		21	Spring	CBH1919
		22	Spring	CBL1241
		23	Spring	CBL1242
		24	Spring	CBL1249
		25	Spring	CBH2070
		26	Shaft	CLA2803
		27	Arm	CNC6181
		28	Lever	CNC7713
		29	Lever	CNC6194
		30	Bracket	CNC6292
		31	Lever	CNC6534
		32	Lever	CNC6535
		33	Lever	CNC6536
		34	Holder	CNC7448
		35	Cover	CNC7452
		36	Spacer	CNM4879
		37	Sheet	CNM5118
		38	PCB	CNP4205
	*	39	PCB	CNP4537
		40	PCB	CNP4382
		41	Bearing	CNR1415
		42	Belt	CNT1053
		43	Plate	CNV4761
		44	Gear	CNV4403
		45	Gear	CNV4404

Mark	No.	Description	Part No.
	46	Gear	CNV4406
	47	Cover	CNV4411
	48	Holder	CNV4412
	49	Gear	CNV4416
	50	Gear	CNV4417
	51	Rail(White)	CNV4419
	52	Rail(Black)	CNV4420
	53	Clamper	CNV4421
	54	Lever	CNV4422
	55	Gear	CNV4423
	56	Gear	CNV4424
	57	Rack	CNV4828
	58	Arm	CNV4426
	59	Guide	CNV4597
	60	Arm	CNV4670
	61	Motor Unit(M851)(Spindle)	CXA9371
	62	Screw	CLA2786
	63	Motor Unit(M854)(Carriage)	CXA9131
	64	Chassis Unit	CXB2245
	65	Bracket Unit	CXB2261
	66	Chassis Unit	CXB2259
	67	Plate Unit	CXB2262
	68	Motor Unit(M853)(Tray)	CXA9139
	69	Damper Unit	CXA7714
	70	Lever Unit	CXA9141
	71	Magazine Holder Unit	CXB2264
	72	Frame Unit	CXB2265
	73	Frame	CNC6943
	74	Motor Unit(M852)(ELV)	CXA9146
	75	Lever Unit	CXB2266
	76	Screw	JFZ17P020FNI
	77	Screw	JFZ20P025FNI
	78	Connector(CN701)	CKS1968
	79	Connector(CN801)	CKS3484
	80	Connector(CN101)	CKS3486
	81	Photo Transistor(Q851)	PT4800
	82	LED(D851)	CN504-2
	83	Arm	CNC6799
	84	Switch(S853)	CSN1012
	85	Screw	CBA1041
	86	Volume(VR801)	CCW1021
	87	Switch(S851,852)	CSN1033
	88	Guide	CNV4722
	89	Spring	CBH1930
	90	Holder	CNC6819

Mark	No.	Description	Part No.
	91	Holder	CNC6827
	92	Holder	CNM5020
	93	Spring	CBH1931
	94	Washer	CBF1038
	95	Screw(M2×2)	CBA1250
	96	Screw(M2×2)	CBA1250
	97	Plate	CNC7015
	98	Ball	CNR1189
	99	Guide	CNV5193
	100	Holder	CNV4761
	101	Spring	CBH1948
	102	Screw(M2×1.4)	CBA1387
	103	Spring	CBL1314
	104	Pulley	CNV4405

2.4 MAGAZINE ASSY

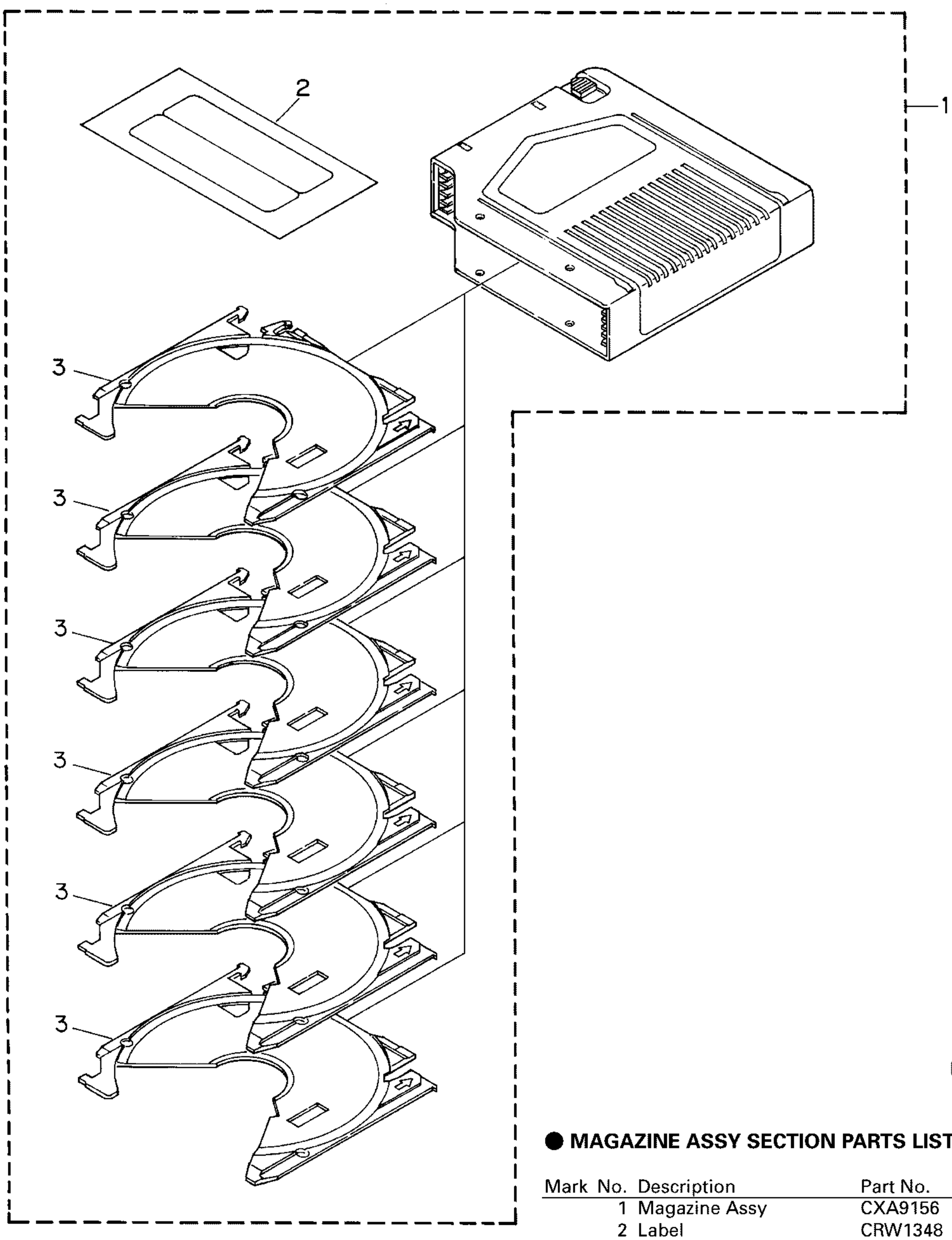


Fig. 4

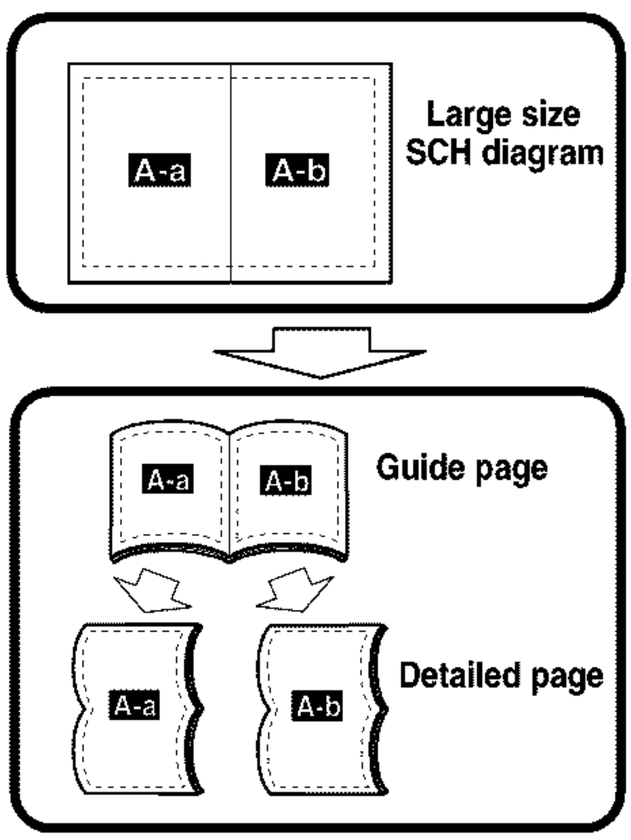
● **MAGAZINE ASSY SECTION PARTS LIST**

Mark No.	Description	Part No.
1	Magazine Assy	CXA9156
2	Label	CRW1348
3	Tray	CNV4900

3. SCHEMATIC DIAGRAM

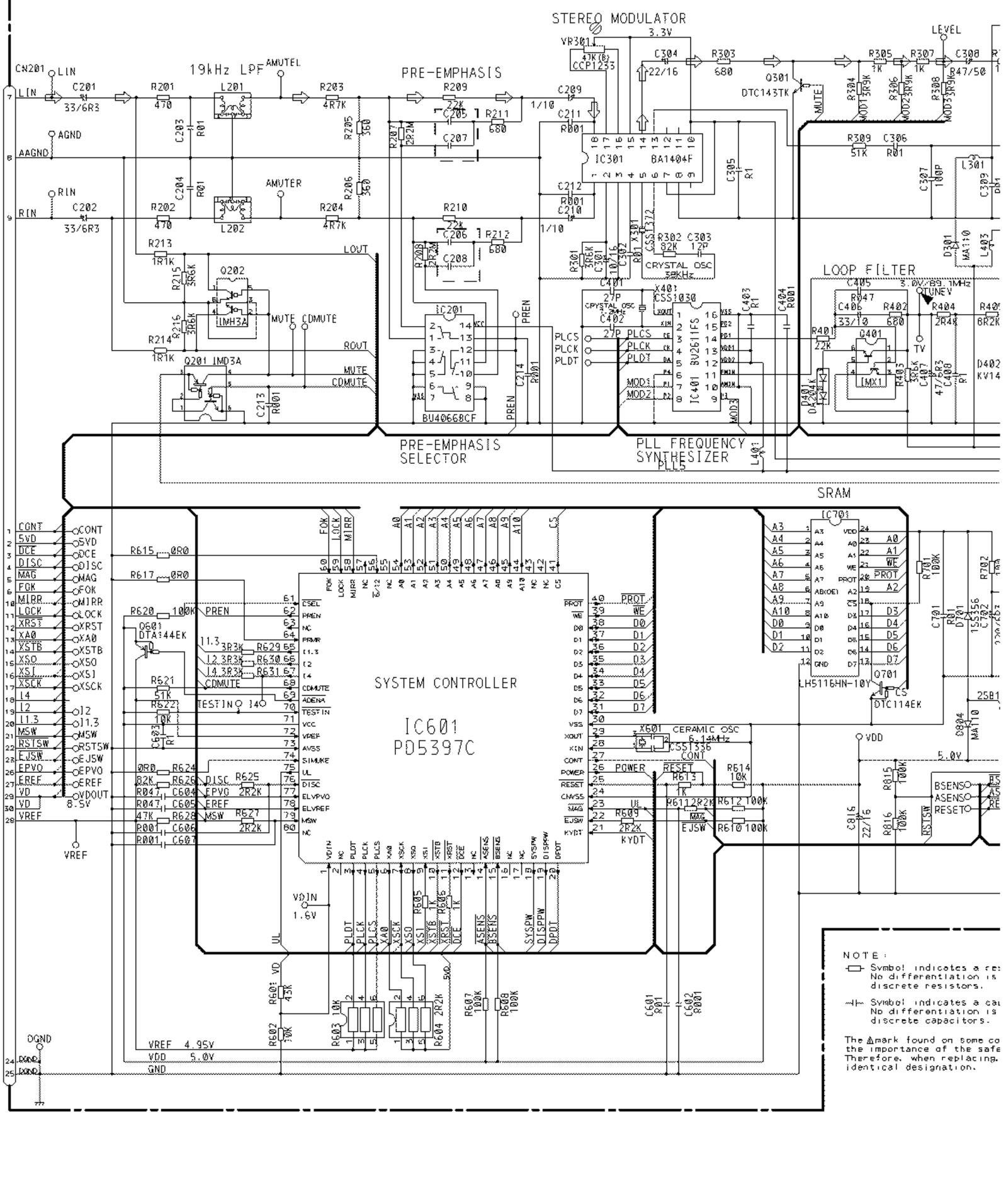
3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

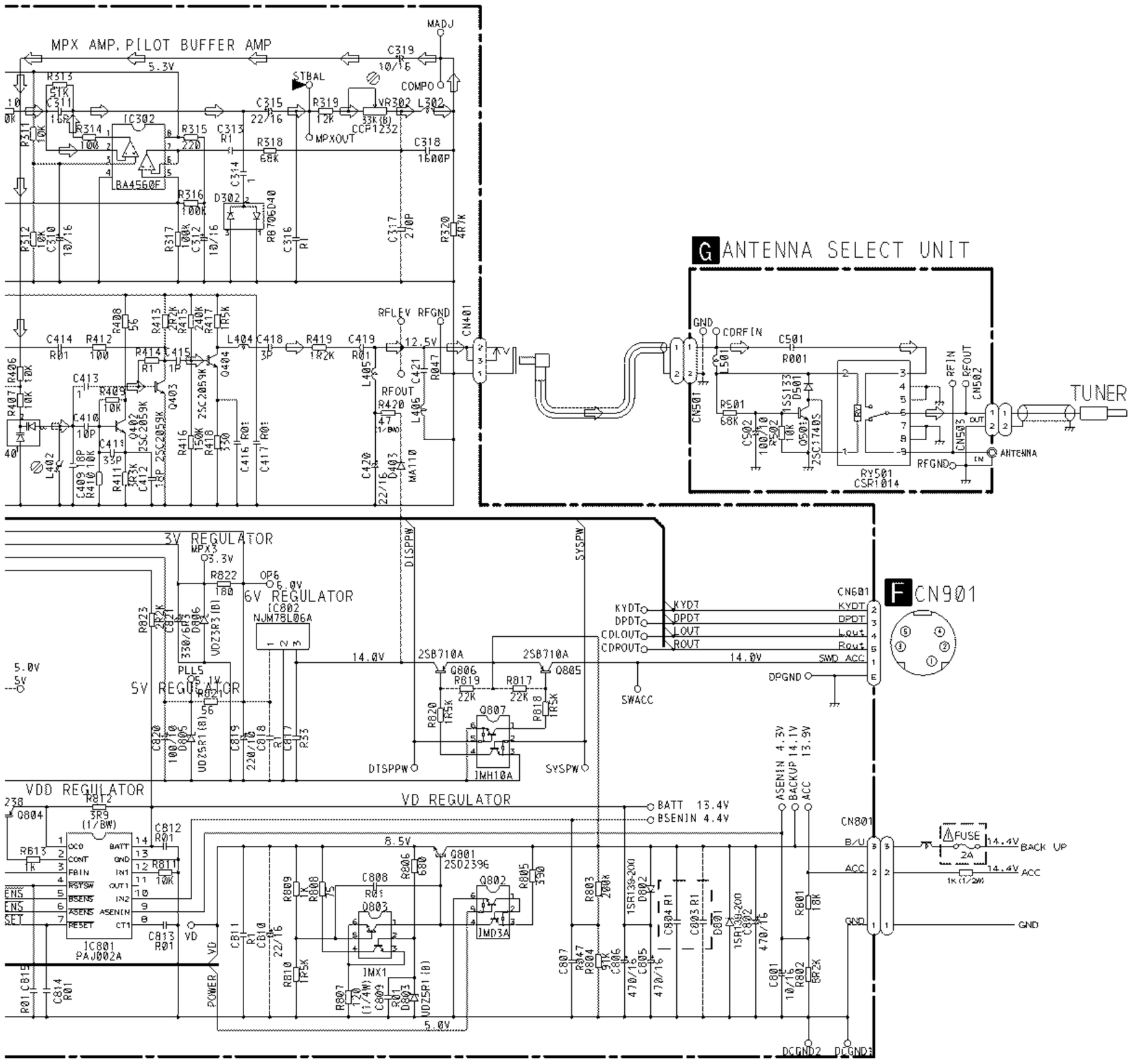


B-a

B SYSTEM UNIT



B-b



	CDX-FM637S/X1N/EW	CDX-FM637S/X1N/ES
C205,206	2700P	3900P
C207,208	2200P	3300P
C803	Not used	R1
C804	R1	Not used
⚠ FUSE(2A)	CEK1063	CEK1048

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 5

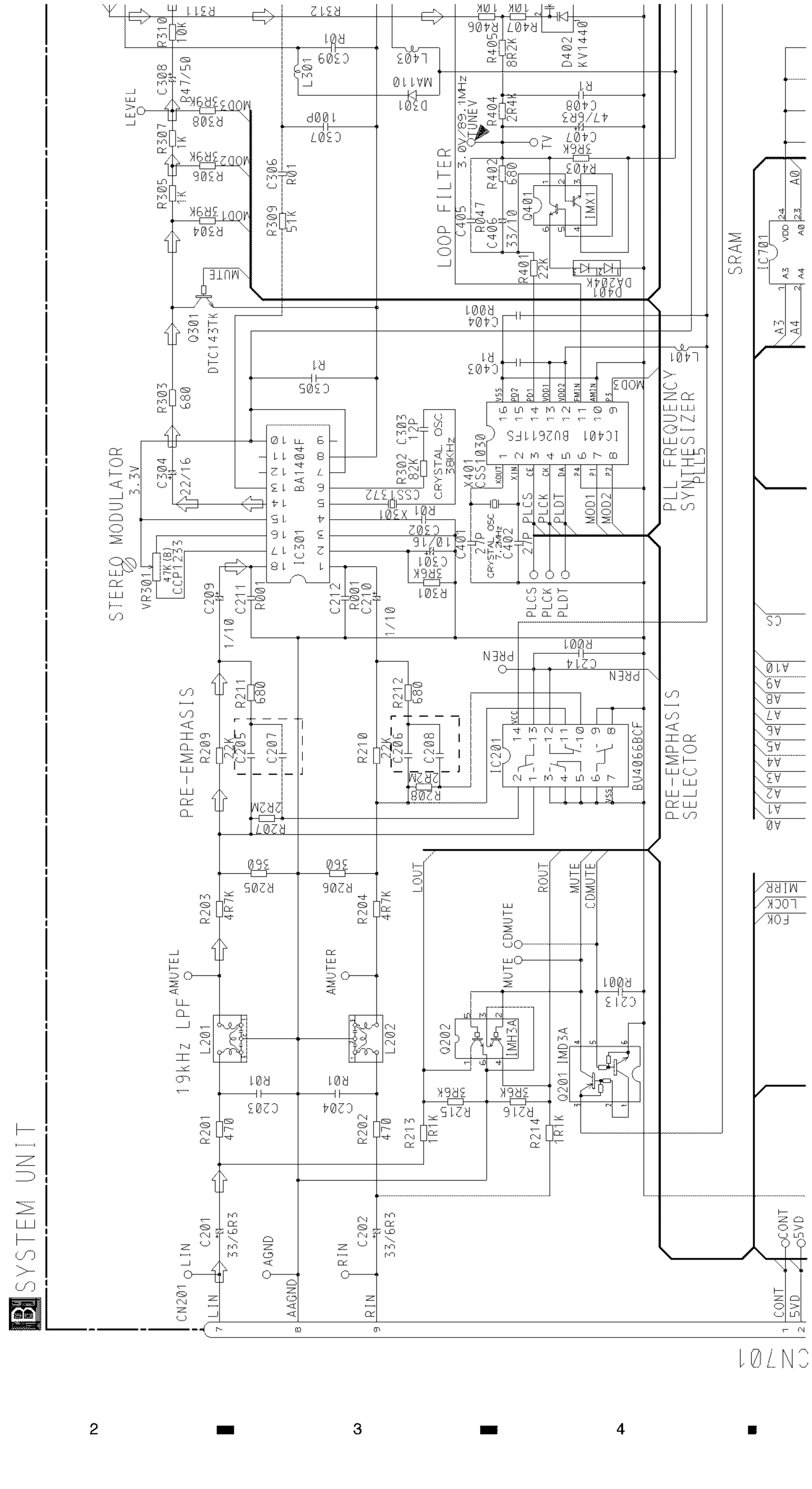
MC-Service

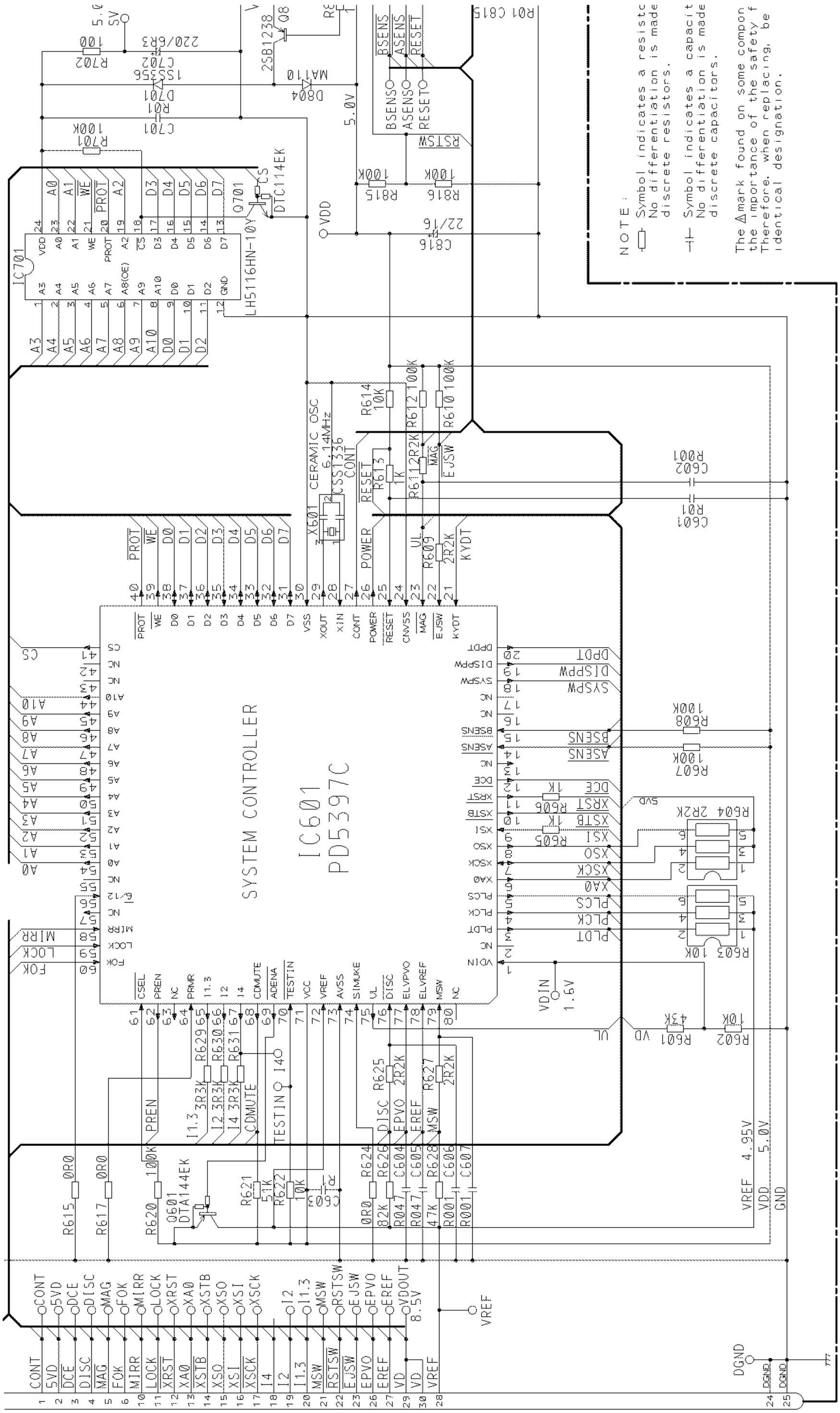
CDX-FM637S

B-b

B-a

MC-Service





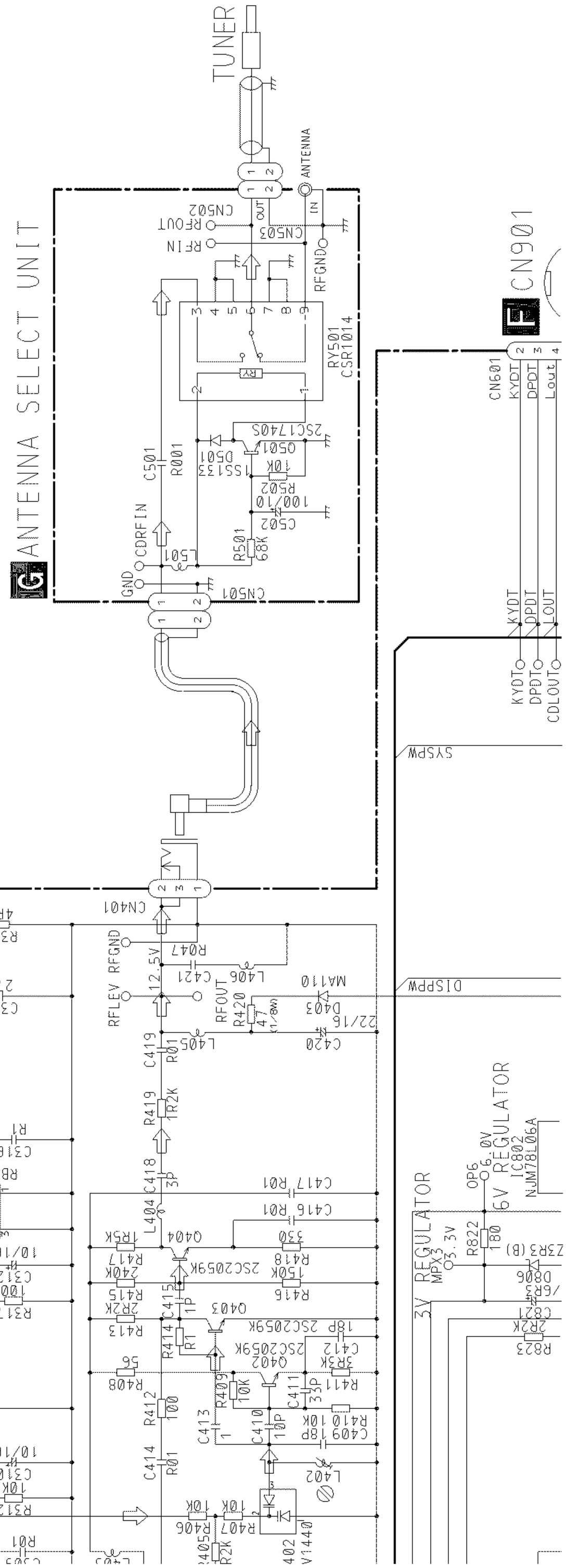
MC-Service

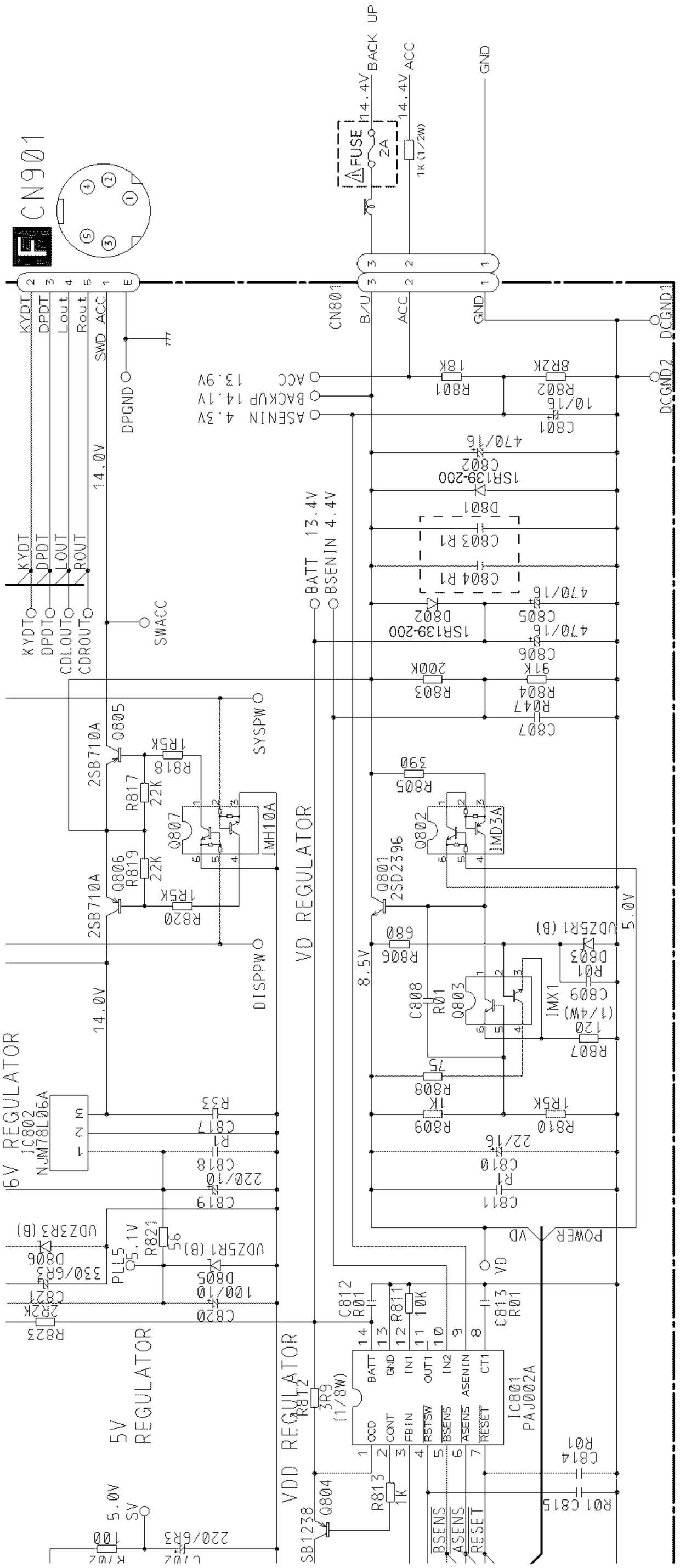
Fig. 6

CDX-FM637S

B-a B-b

MC-Service





	CDX-FM637S/X1N/ES	CDX-FM637S/X1N/EW
C205,206	3900P	2700P
C207,208	3300P	2200P
C803	R1	Not used
C804	Not used	R1
△ FUSE(2A)	CEK1048	CEK1063

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

resistor.
is made between chip resistors and

capacitor.
is made between chip capacitors and
.

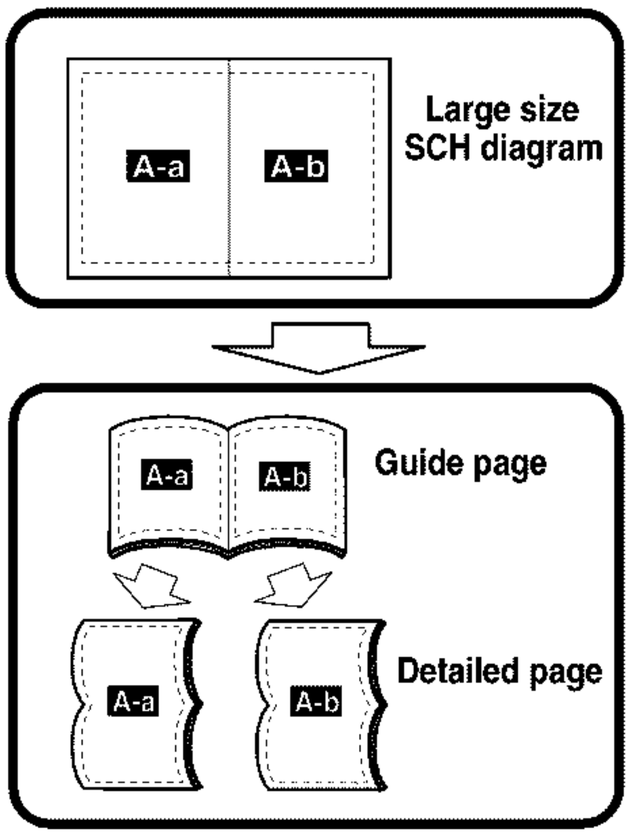
component parts indicates
afety factor of the part.
ng. be sure to use parts of

Fig. 7

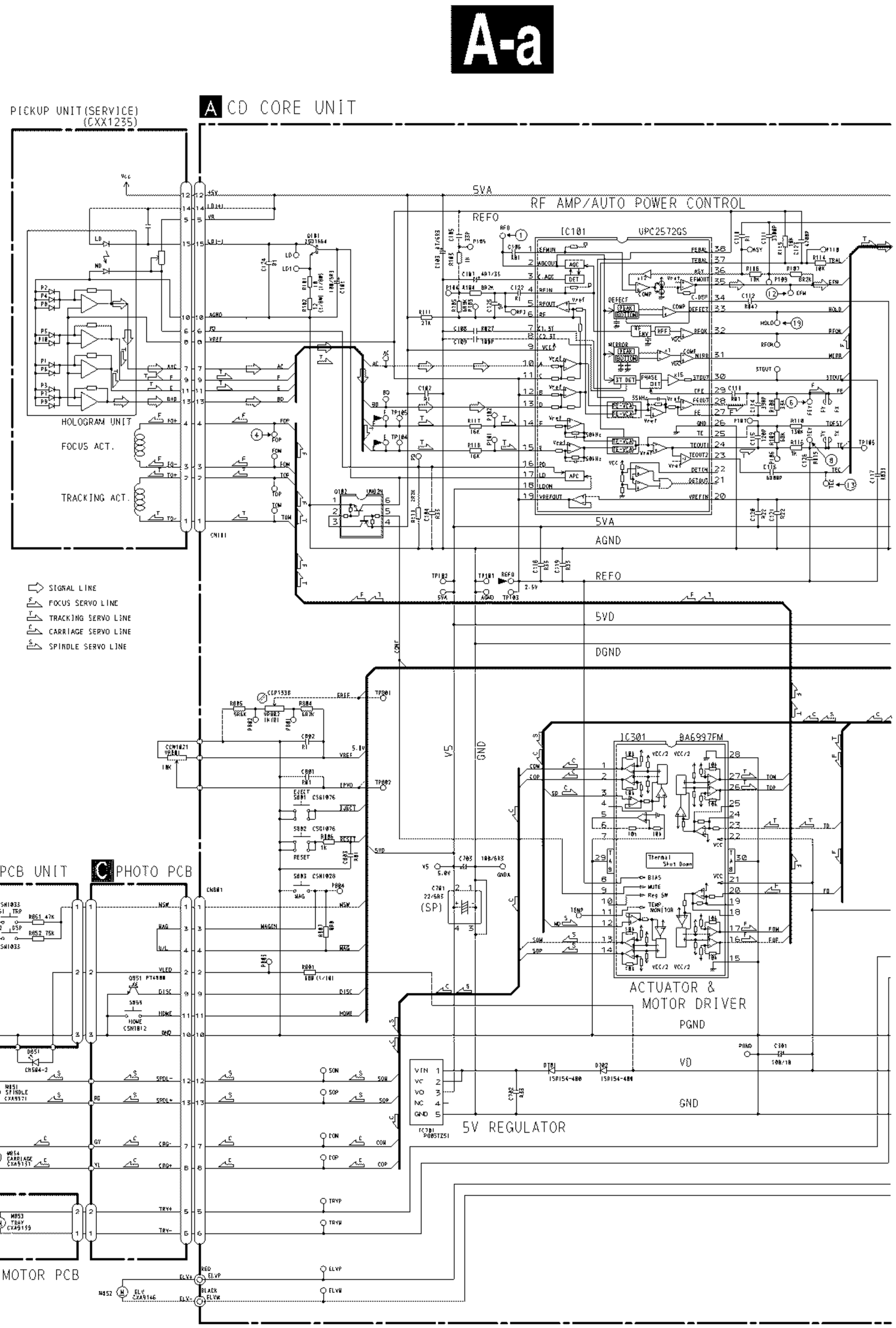
MC-Service

B-b

3.2 CD MECHANISM MODULE(GUIDE PAGE)

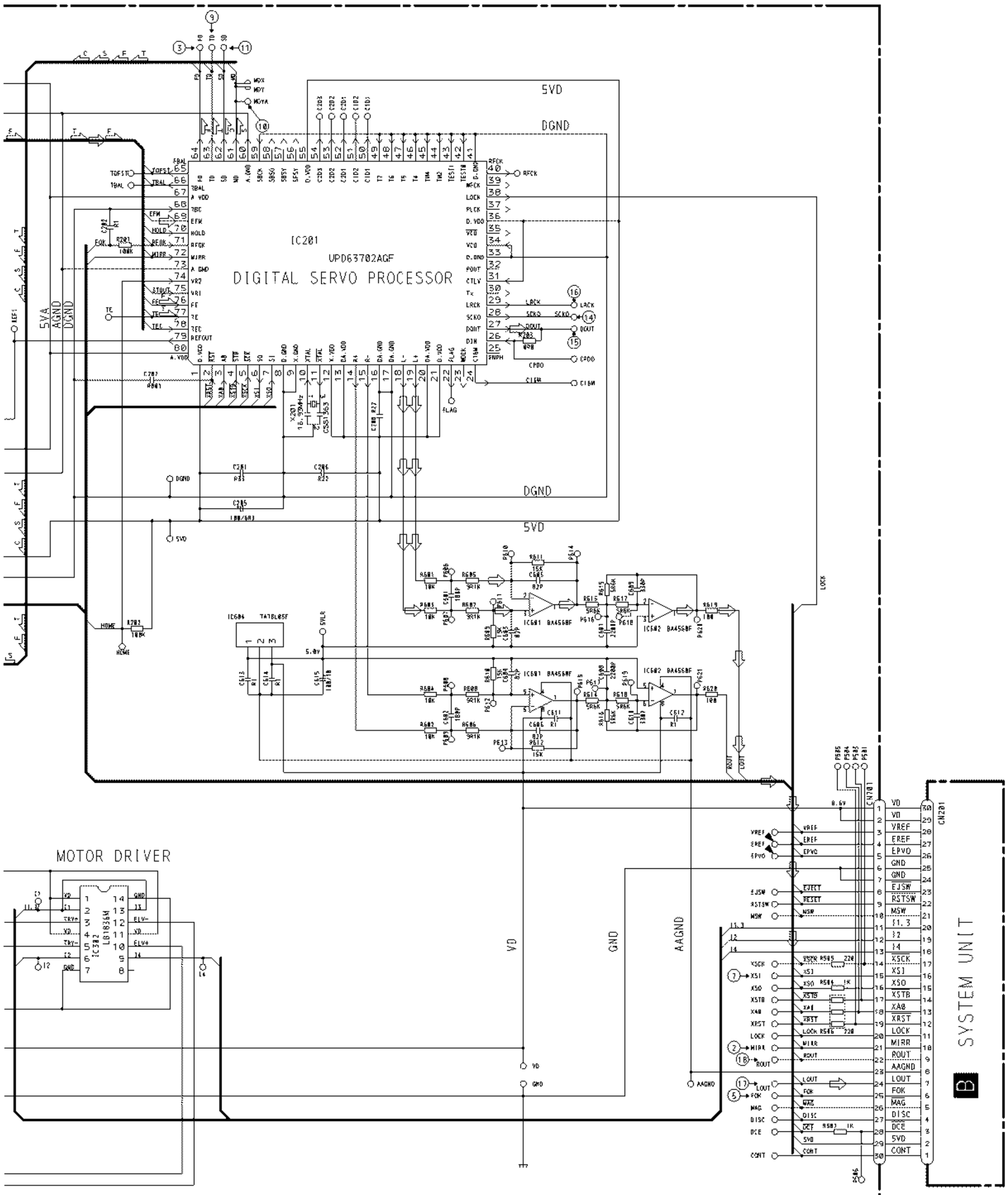


MC-Service



MC-Service

A-b

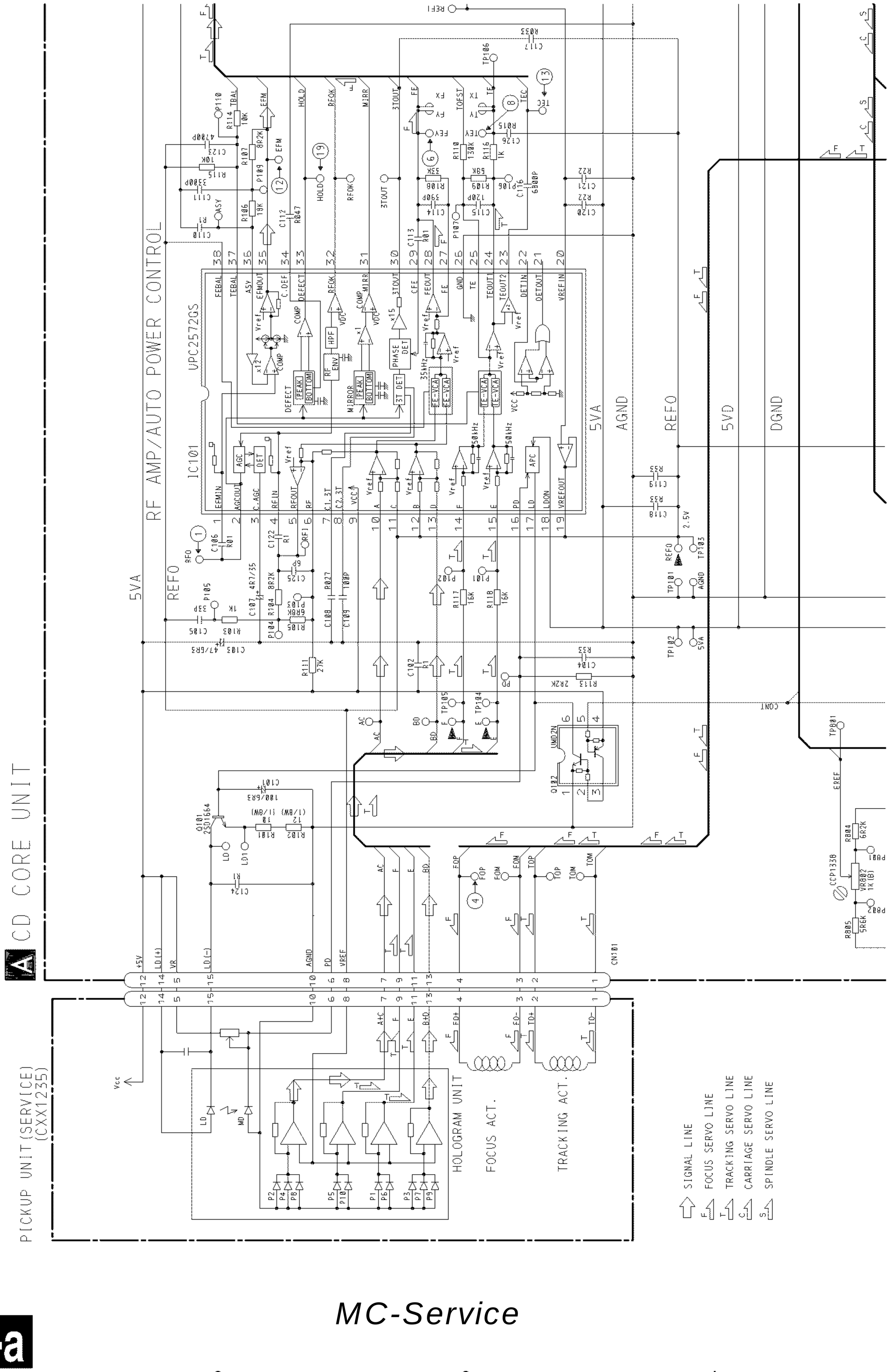


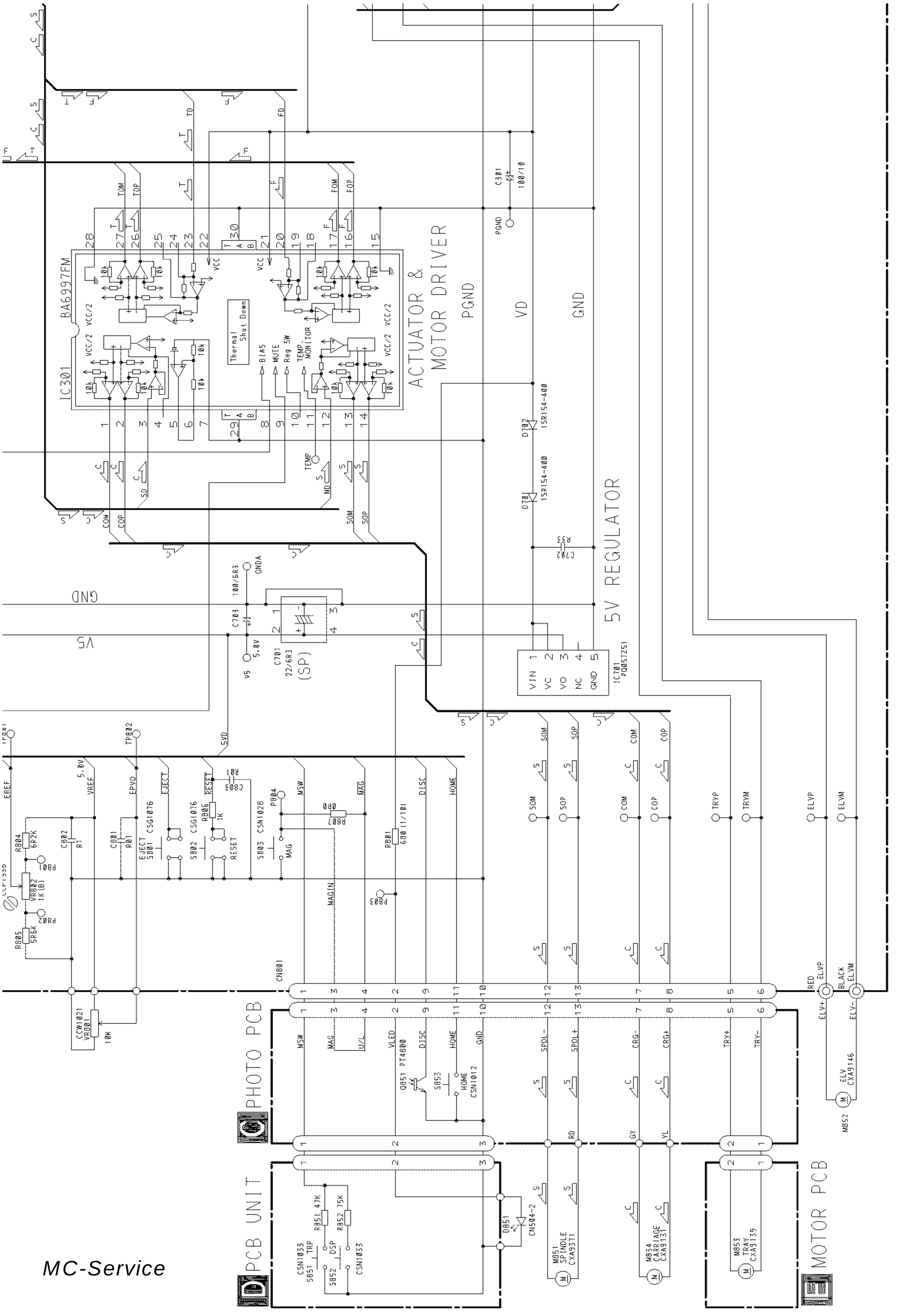
NOTE :

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 8

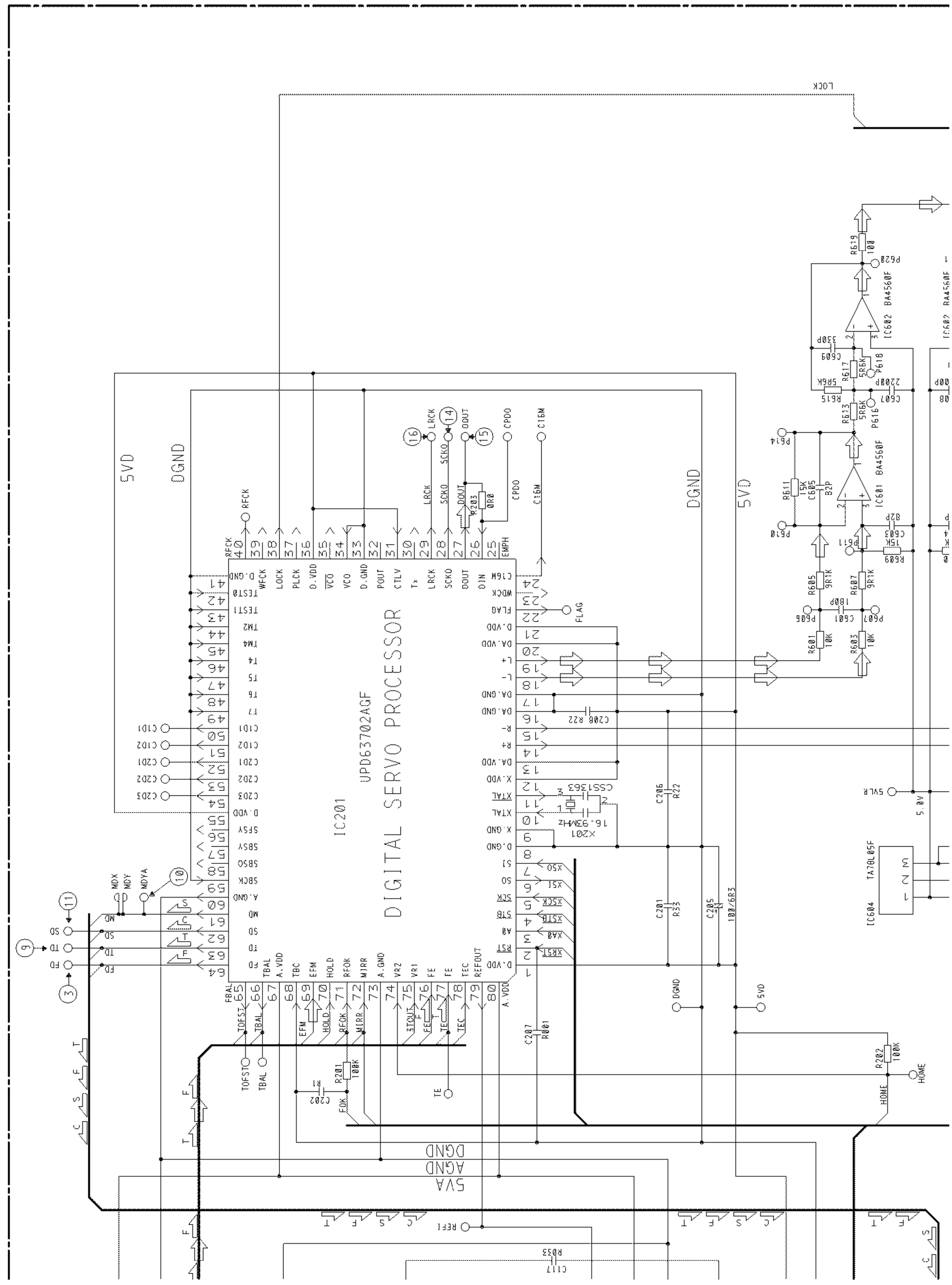

RF AMP/AUTO POWER CONTROL
CD CORE UNIT
PICKUP UNIT(SERVICE)
(CXX1235)
HOLOGRAM UNIT
FOCUS ACT.
TRACKING ACT.
UPC2572GS
1C101
5VA
REFO
AGND
5VD
DGND
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE



MC-Service

Fig. 9

MC-Service


5VD
DGND
RFCK
LRCK
SCKO
DOUT
CPDO
C16M
EMPH
LOCK
FLAG
DIGITAL SERVO PROCESSOR
UPD63702AGF
IC201
TOFST
TBAL
EFM
HOLD
RFOK
MIRR
TE
FE
TEC
REFO
HOME
DGND
AGND
5VA
IC601 BA4560F
IC602 BA4560F
IC604 TA78L05F
X201
16.93MHz
CSS1363
C208 R22
C206 R22
C201 R33
C205 100/6R3
C207 R001
C117 R033
R203 0R0
R201 100K
C202 R1
R202 100K
R601 10K
R603 10K
R605 9R1K
R607 9R1K
C601 180P
C603 15K
R689
R611 15K
C605 82P
C607 2200P
R615 5R6K
R617 5R6K
C609 330P
R619 10R
5VLR
5.0V

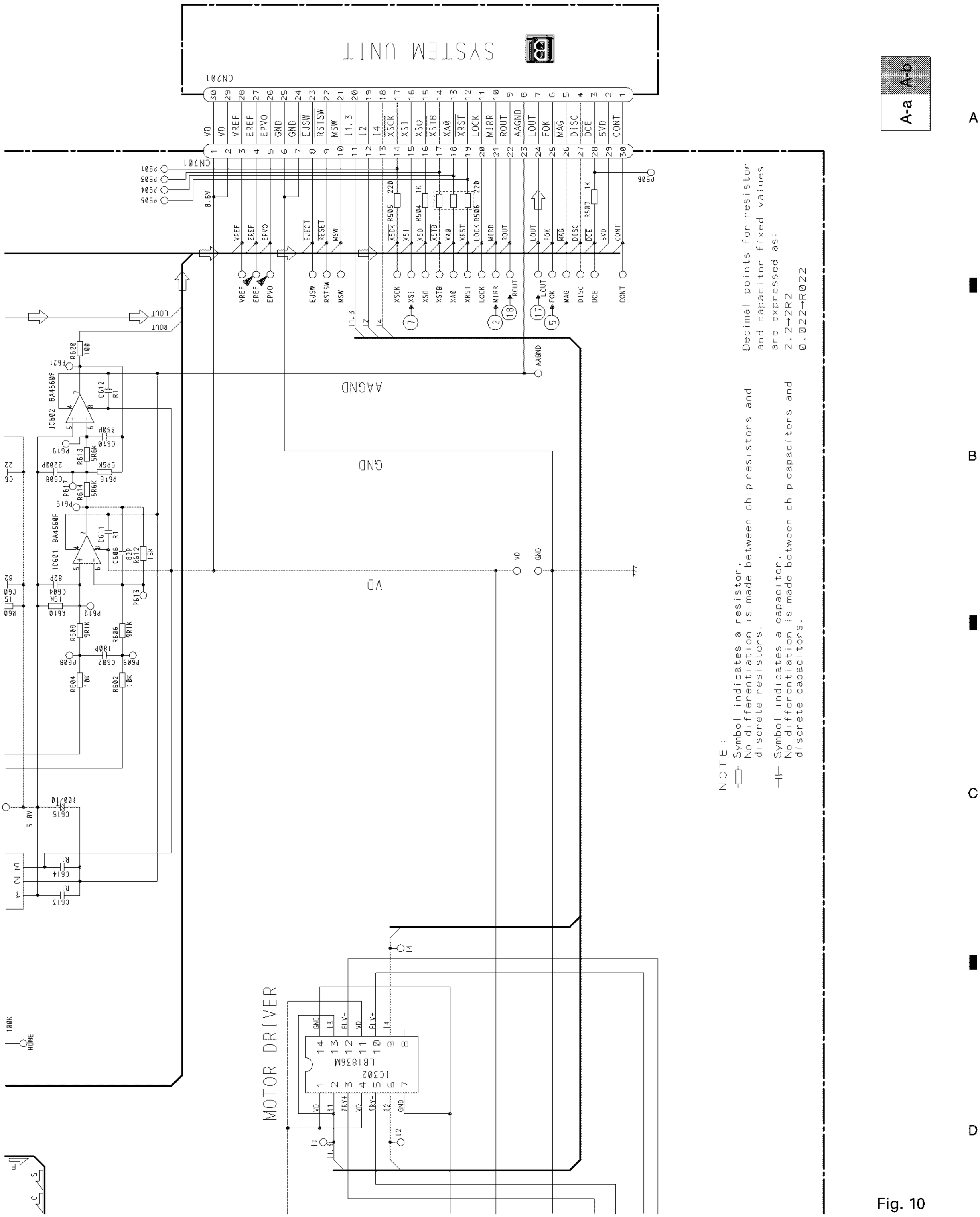
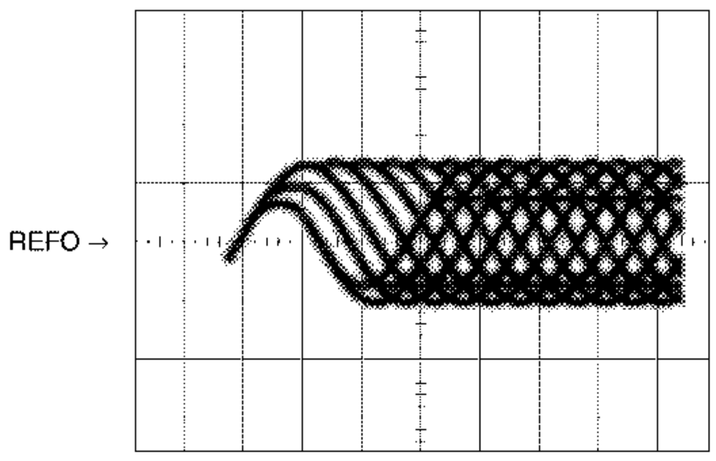

SYSTEM UNIT
CN201
CN701
VD
VREF
EREF
EPVO
GND
EJSW
RSTSW
MSW
I1.3
I2
I4
XSCK
XSI
XSO
XSTB
XA0
XRST
LOCK
MIRR
ROUT
AAGND
LOUT
FOK
MAG
DISC
DCE
SVD
CONT
8.6V
5.0V
IC602 BA4560F
IC601 BA4560F
IC302 LB1836M
MOTOR DRIVER
HOME
100K
AAGND
GND
VD
NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 10

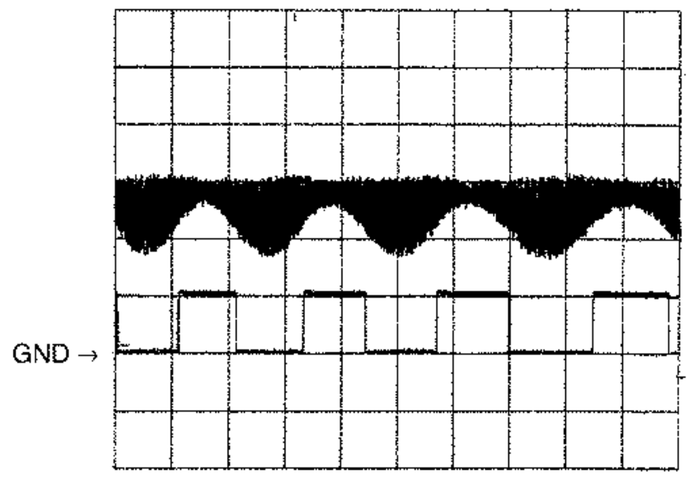
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

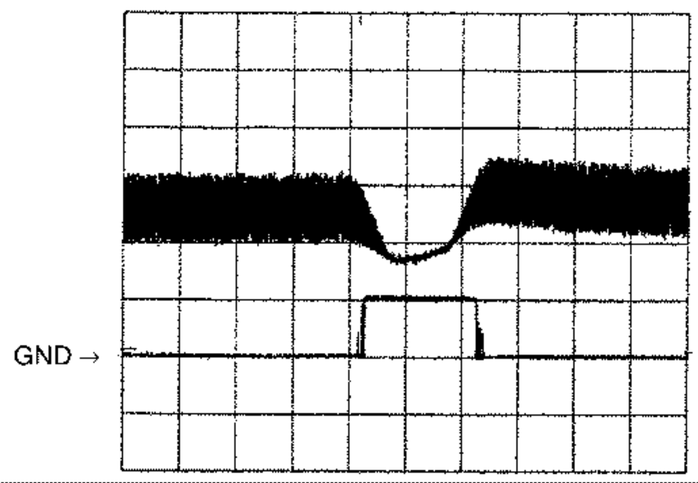
① RFO 0.5V/div. 0.5µs/div.
Normal mode: play



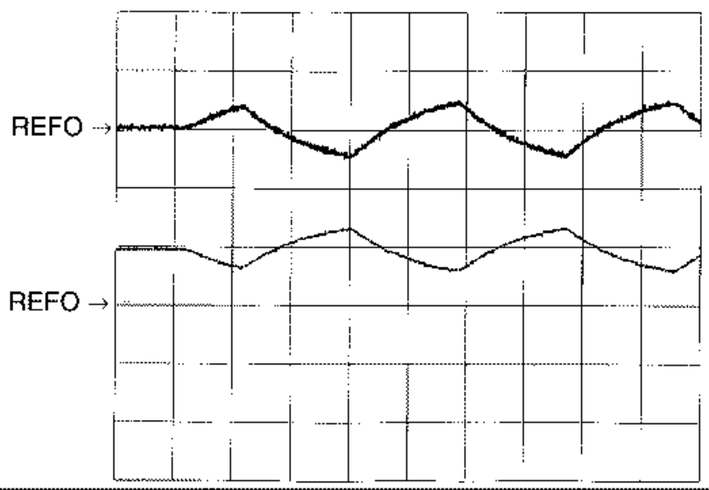
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



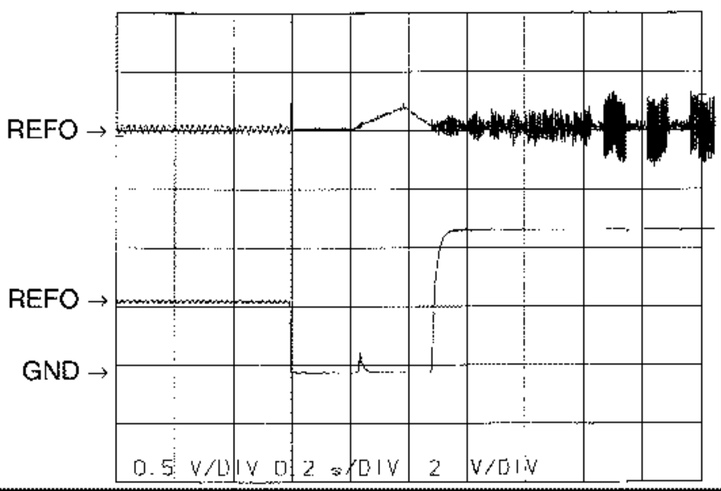
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800µm



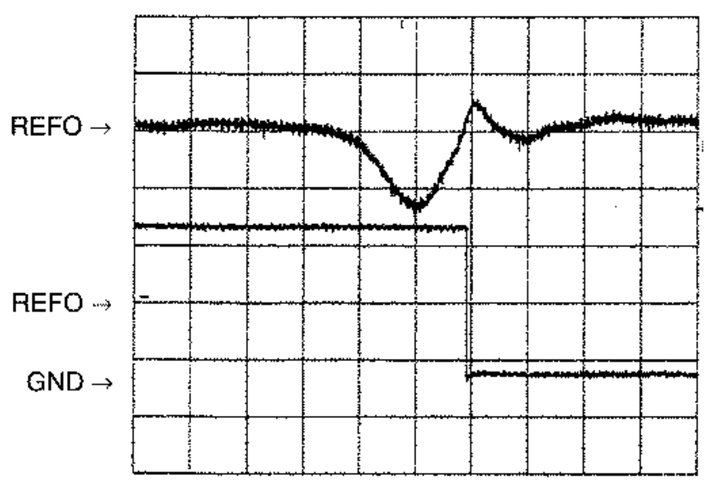
③ CH1: FD 0.5V/div.
④ CH2: FOP 2V/div. 0.2s/div.
Test mode: No disc, Focus close



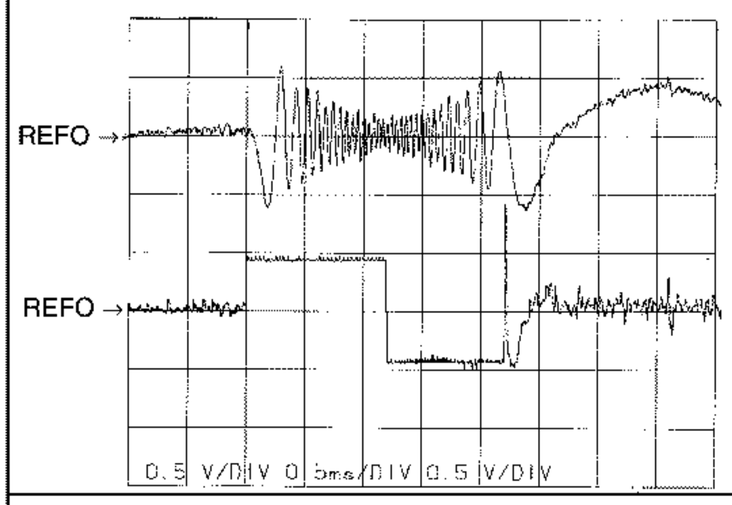
③ CH1: FD 0.5V/div.
⑤ CH2: FOK 2V/div. 0.2s/div.
Normal mode: Focus close



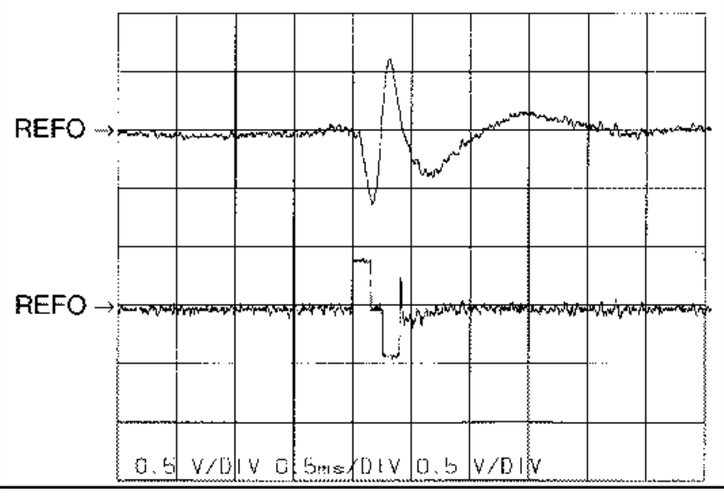
⑥ CH1: FEY 0.5V/div.
⑦ CH2: XSI 2V/div. 1ms/div.
Normal mode: Focus close



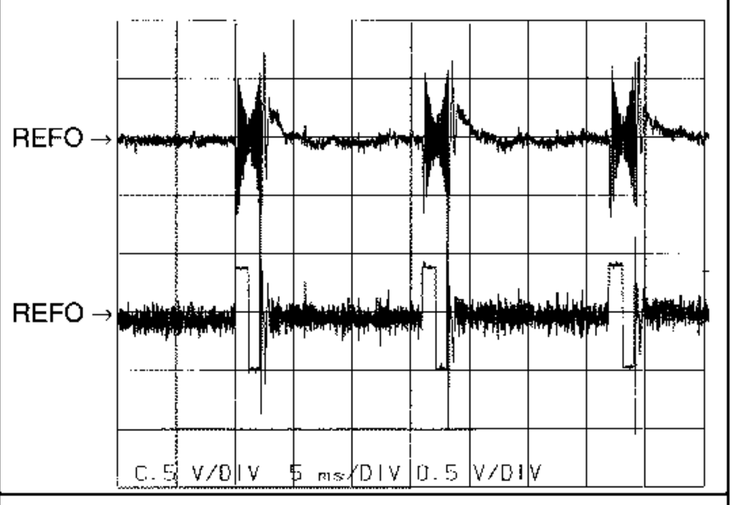
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 0.5ms/div.
Test mode: 32 tracks jump (FWD)



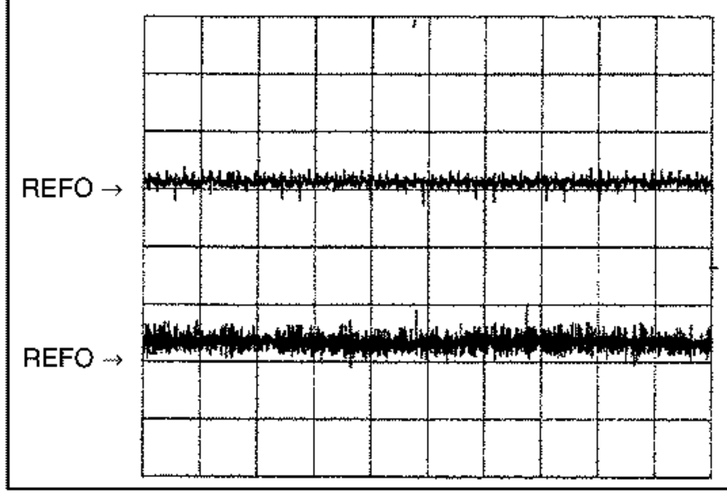
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 0.5ms/div.
Test mode: Single jump (FWD)



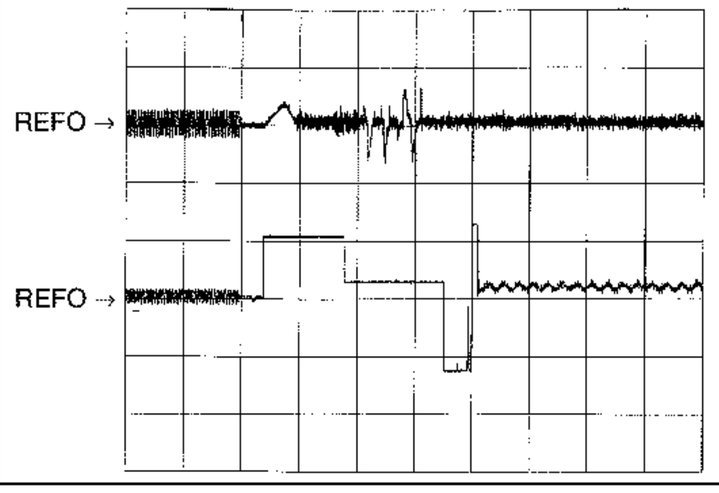
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 5ms/div.
Test mode: 100 tracks jump (FWD)



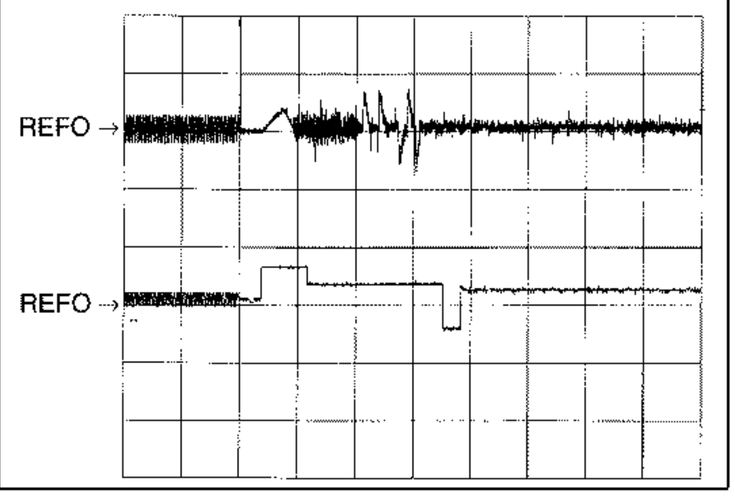
⑥ CH1: FEY 0.1V/div.
③ CH2: FD 0.2V/div. 20ms/div.
Normal mode: Play



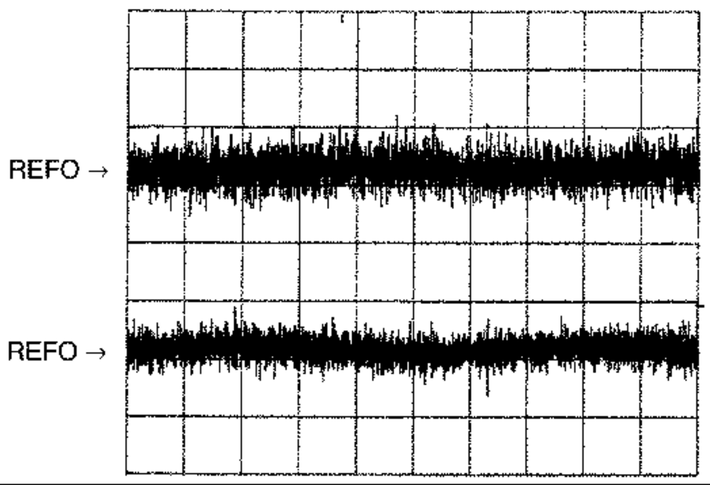
③ CH1: FD 0.5V/div.
⑩ CH2: MDYA 1V/div. 0.5s/div.
Normal mode: Focus close (12cm)



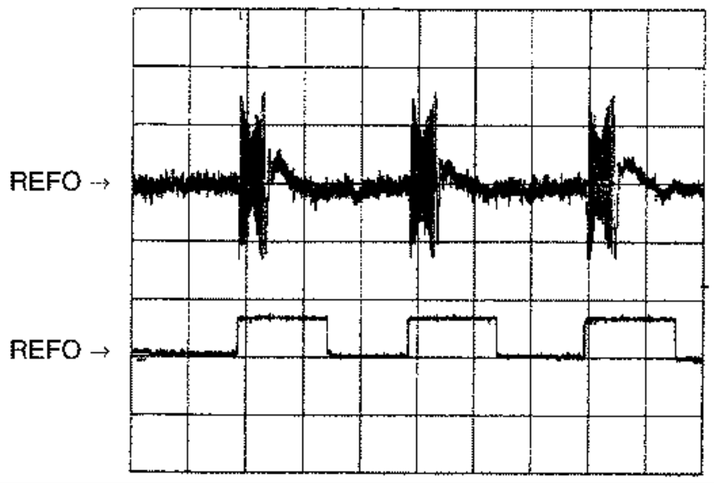
③ CH1: FD 0.5V/div.
⑩ CH2: MDYA 1V/div. 0.5s/div.
Normal mode: Focus close (8cm)



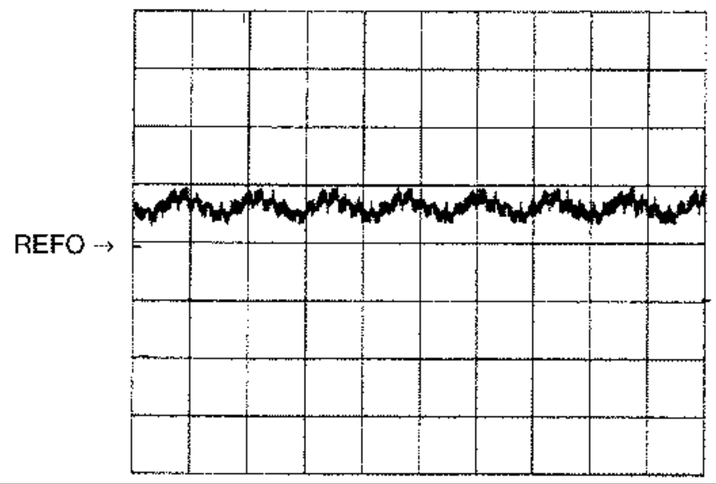
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TD 0.2V/div. 20ms/div.
Normal mode: play



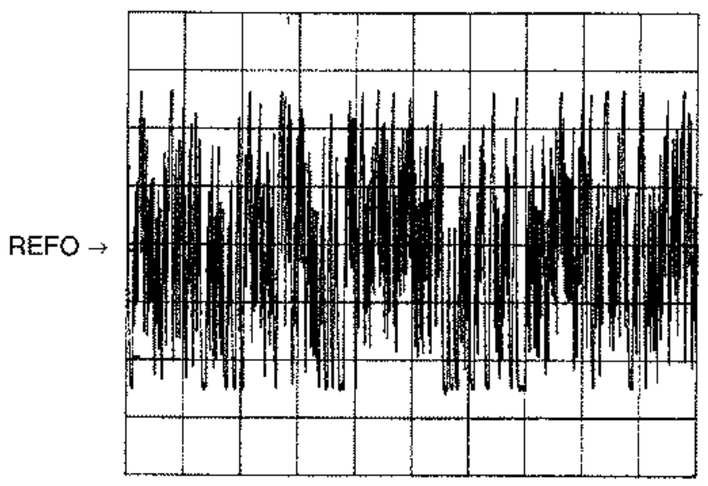
⑧ CH1: TEY 0.5V/div.
⑪ CH2: SD 0.5V/div. 5ms/div.



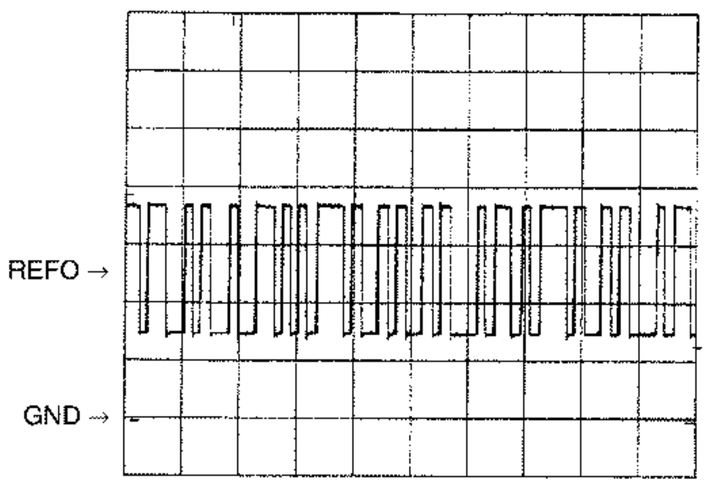
⑩ MDYA 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



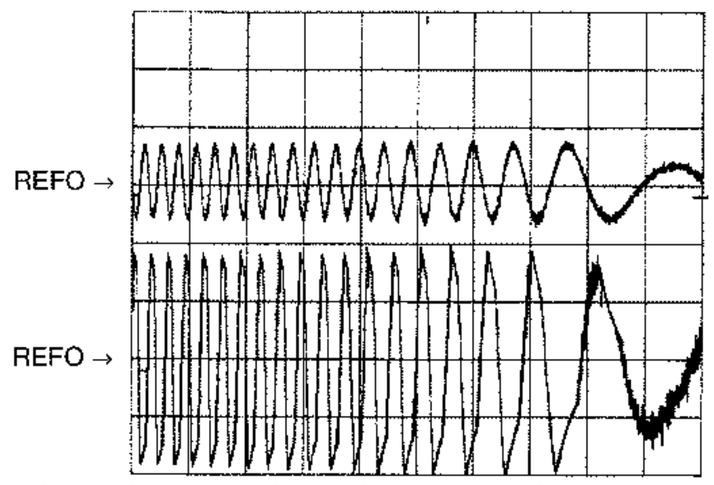
⑩ MDYA 0.5V/div. 10ms/div.
Long Search (12cm)



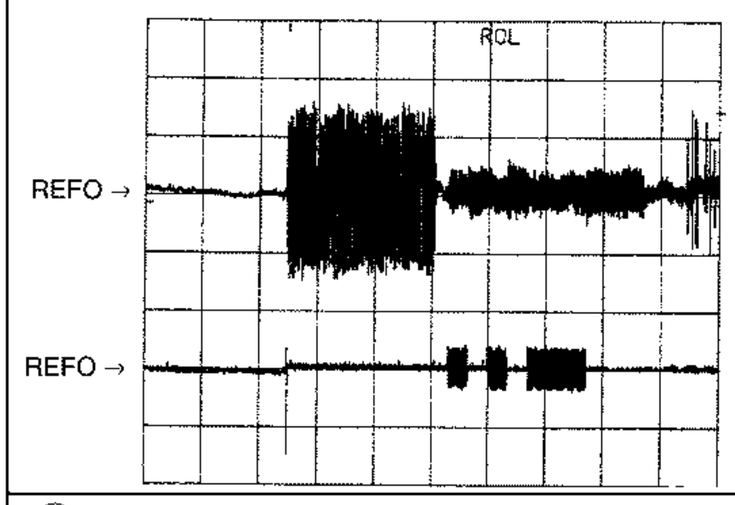
⑫ EFM 1V/div. 5µs/div.
Play



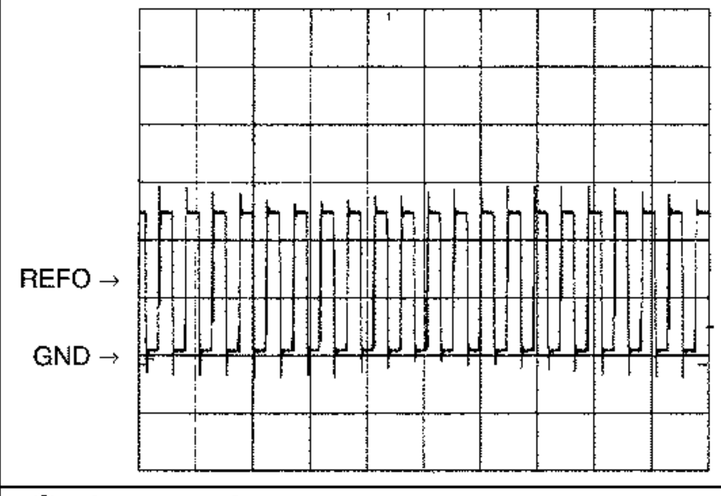
⑧ CH1: TEY 1V/div.
⑬ CH2: TEC 1V/div. 2ms/div.
Test mode: Focus close
Tracking open



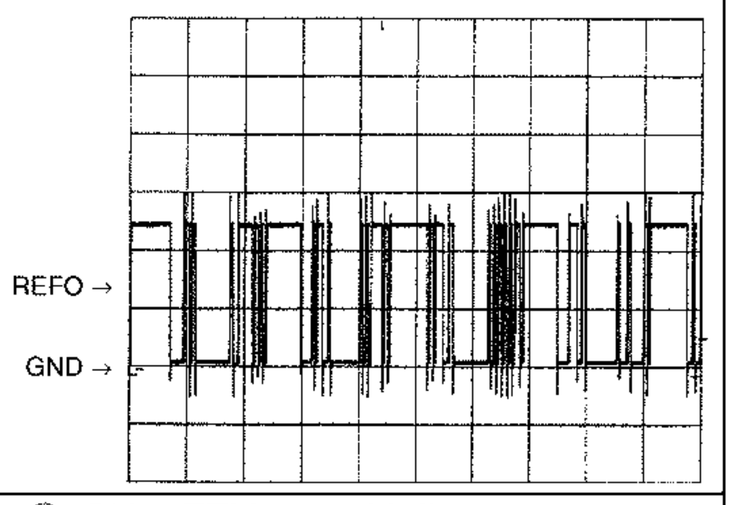
⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div. 0.2s/div.
Normal mode: AGC after focus close



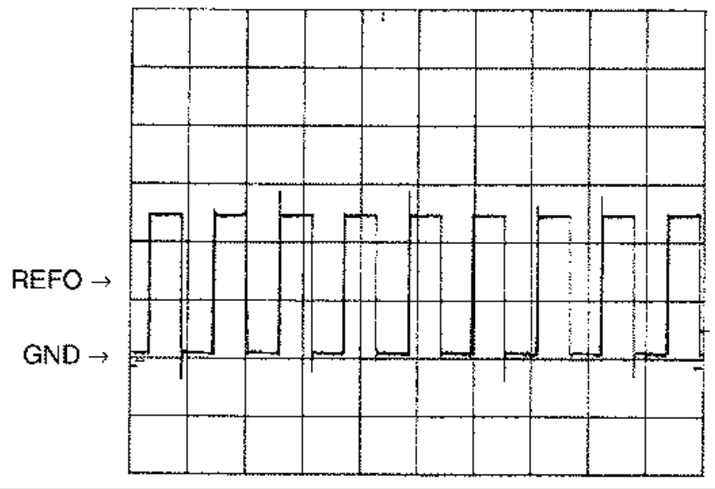
⑭ SCKO 2V/div. 1µs/div.
Play



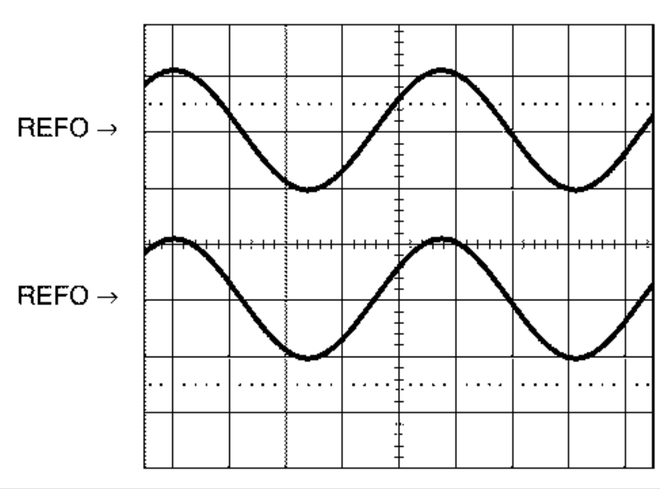
⑮ Dout 2V/div. 10µs/div.
Play



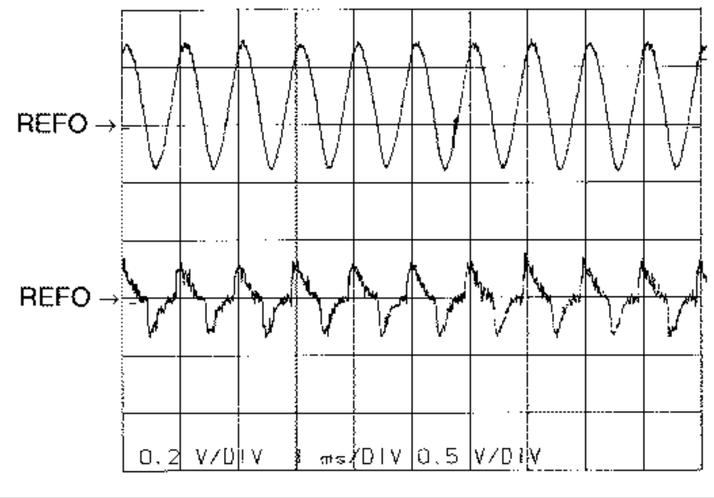
⑯ LRCK 2V/div. 20µs/div.



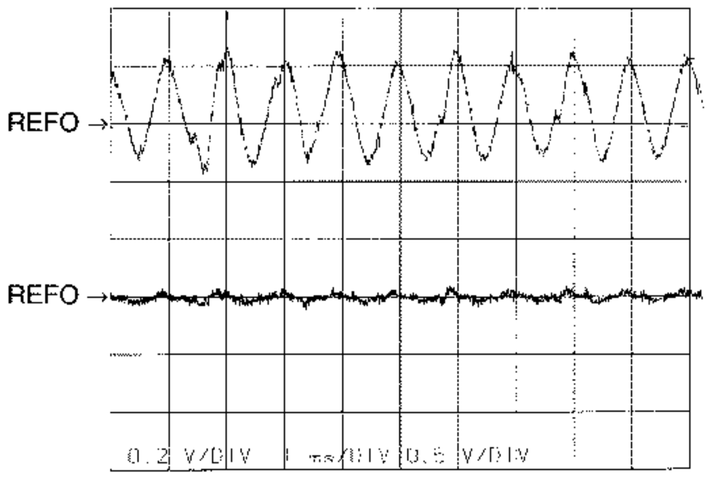
⑱ CH1: R OUT 1V/div.
⑰ CH2: L OUT 1V/div. 0.2ms/div.
Normal mode: Play (1kHz 0dB)



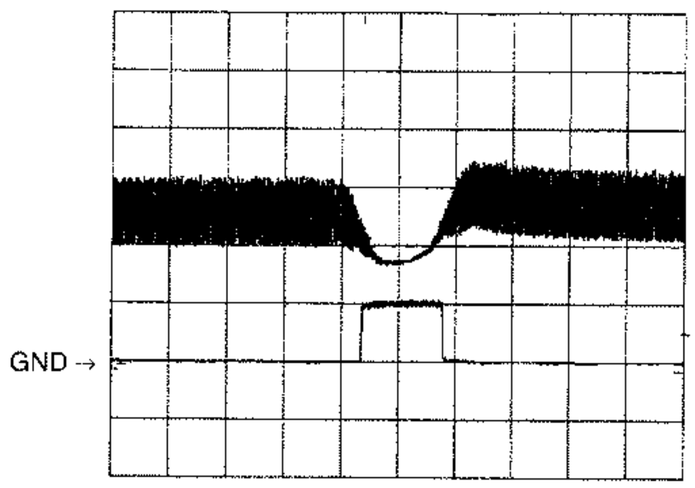
⑥ CH1: FEY 0.2V/div.
③ CH2: FD 0.5V/div. 1ms/div.
Normal mode: During AGC



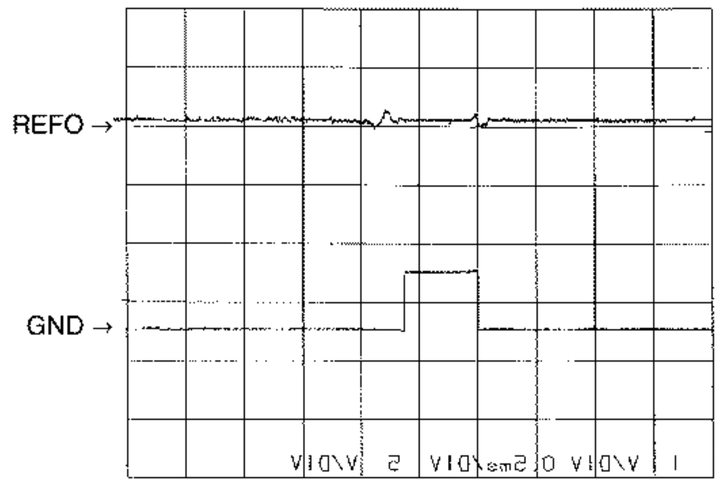
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TD 0.5V/div.
1ms/div.
Normal mode: During AGC



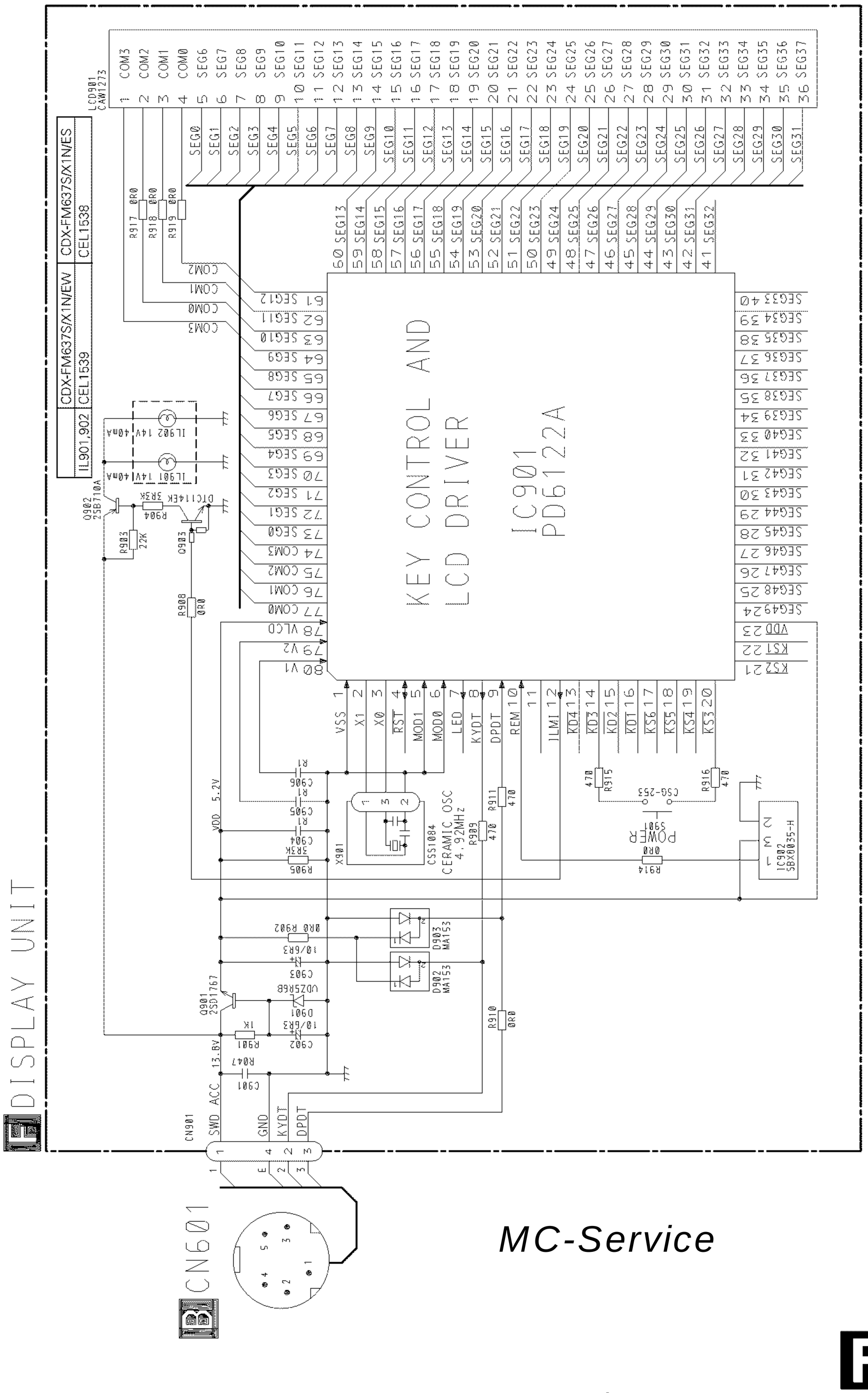
① CH1: RFO 1V/div.
⑲ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm



③ CH1: FD 1V/div.
⑲ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800µm



3.3 DISPLAY UNIT



MC-Service

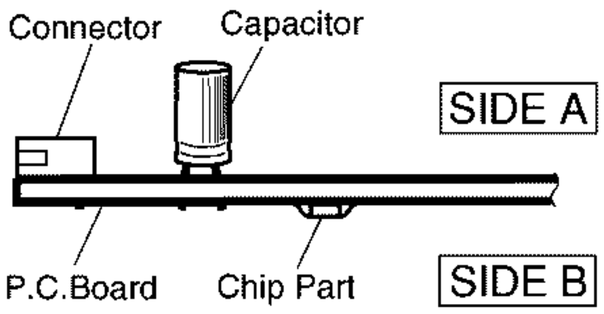
Fig. 11

4. PCB CONNECTION DIAGRAM

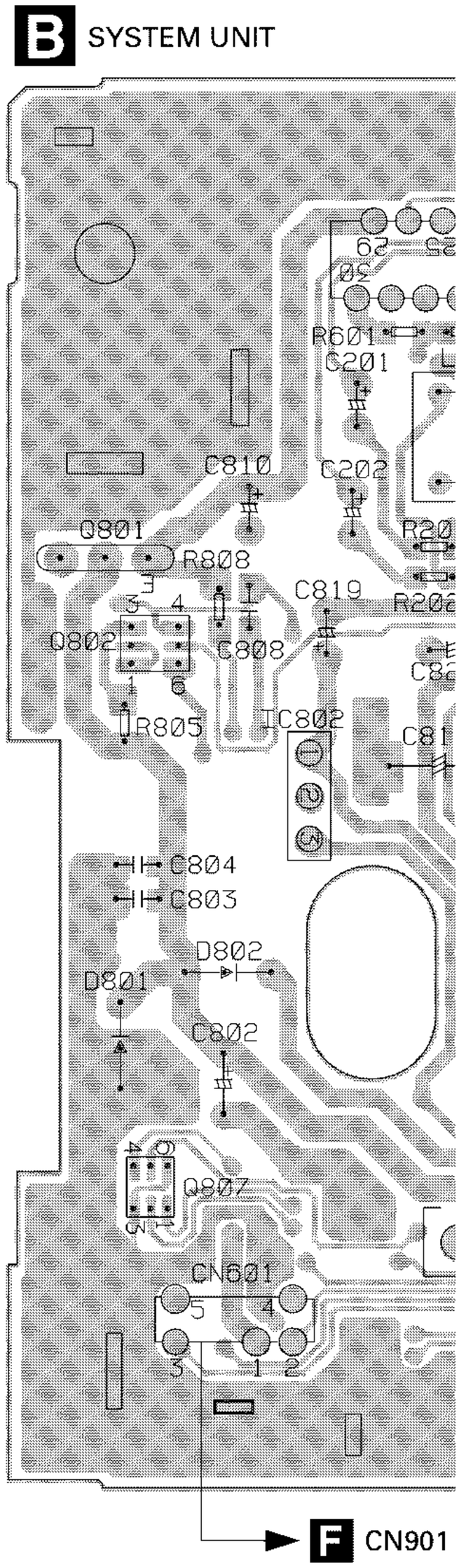
4.1 SYSTEM UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



IC, Q	ADJ
Q601	
IC601	
IC701	
Q801 IC801	
Q804	
Q802	
IC802	
IC201 IC401	
Q201	
Q401	VR301
	L402
Q301	
Q402	
Q807	
Q404	
Q403	VR302



SIDE A

MC-Service

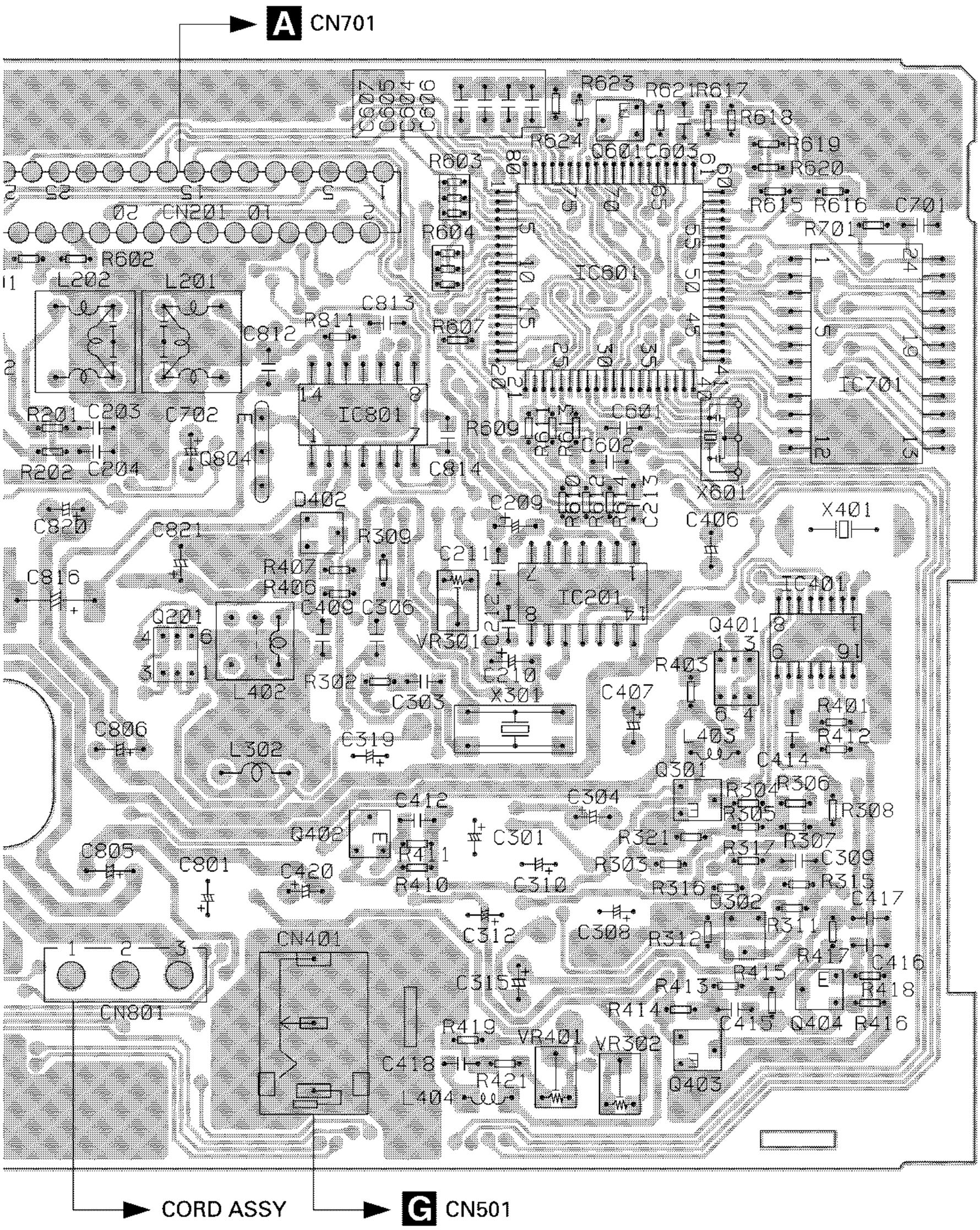
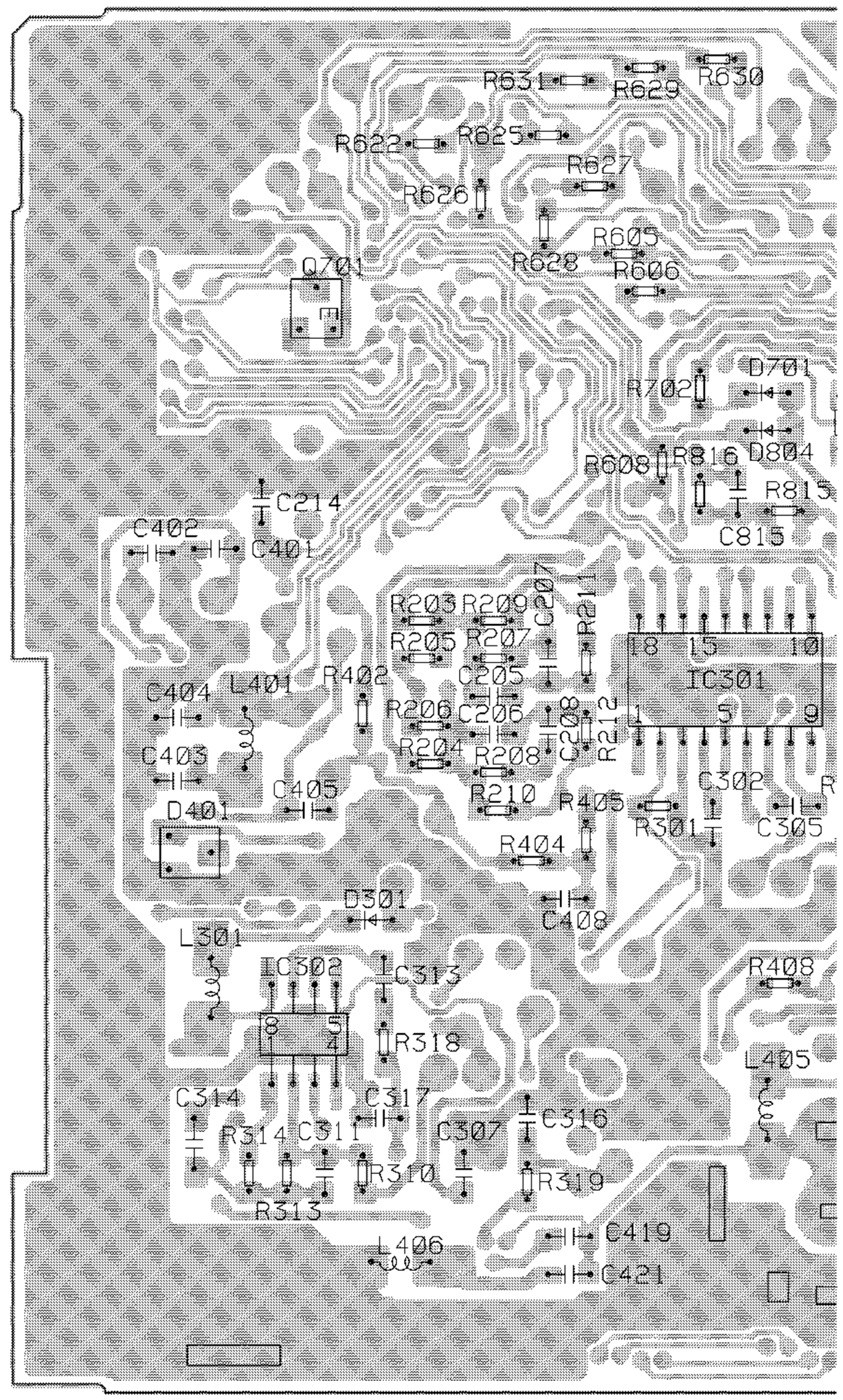


Fig. 12

CDX-FM637S

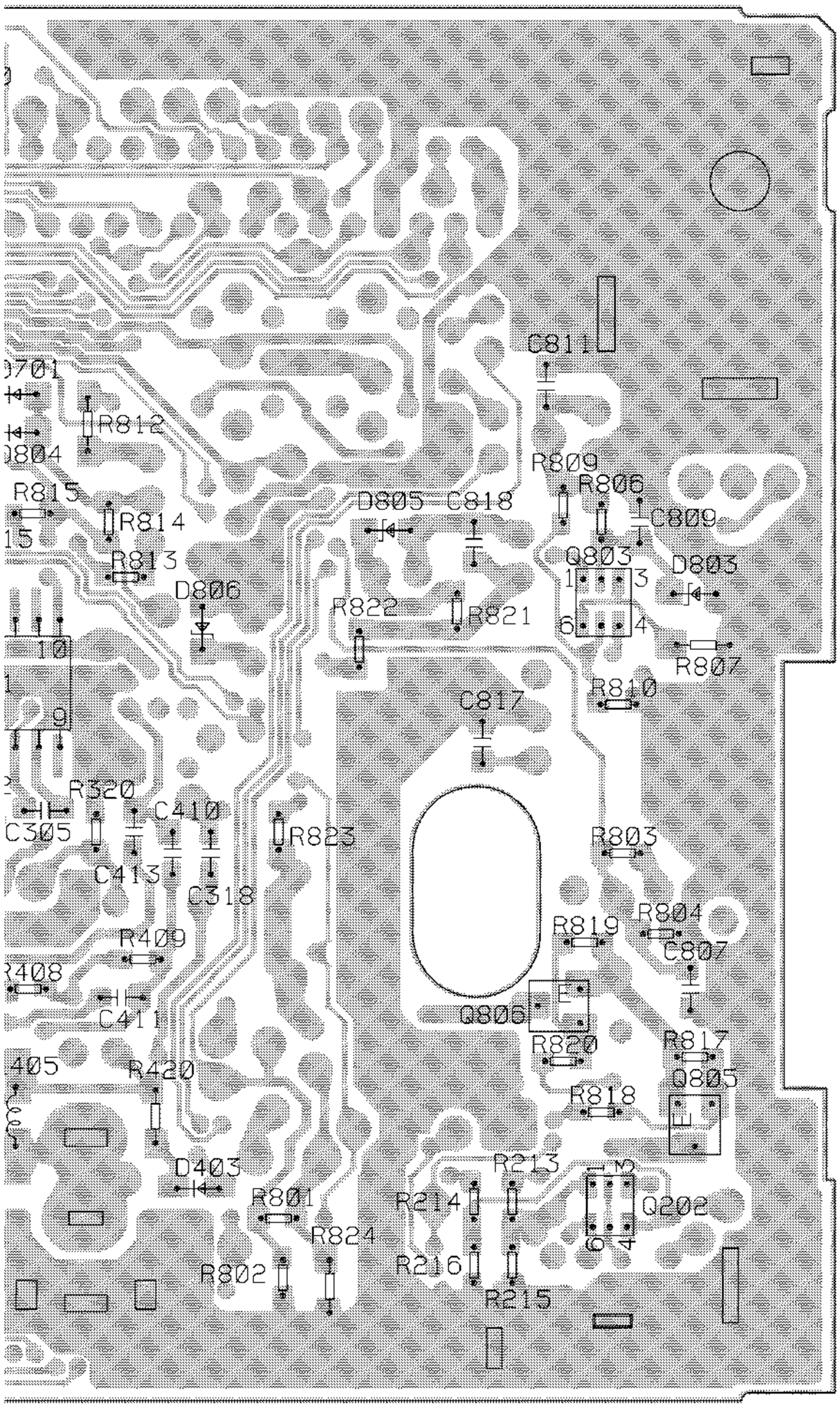
MC-Service

B SYSTEM UNIT



MC-Service

SIDE B



IC, Q

Q701

B

Q803

D

IC301

C

Q806
IC302

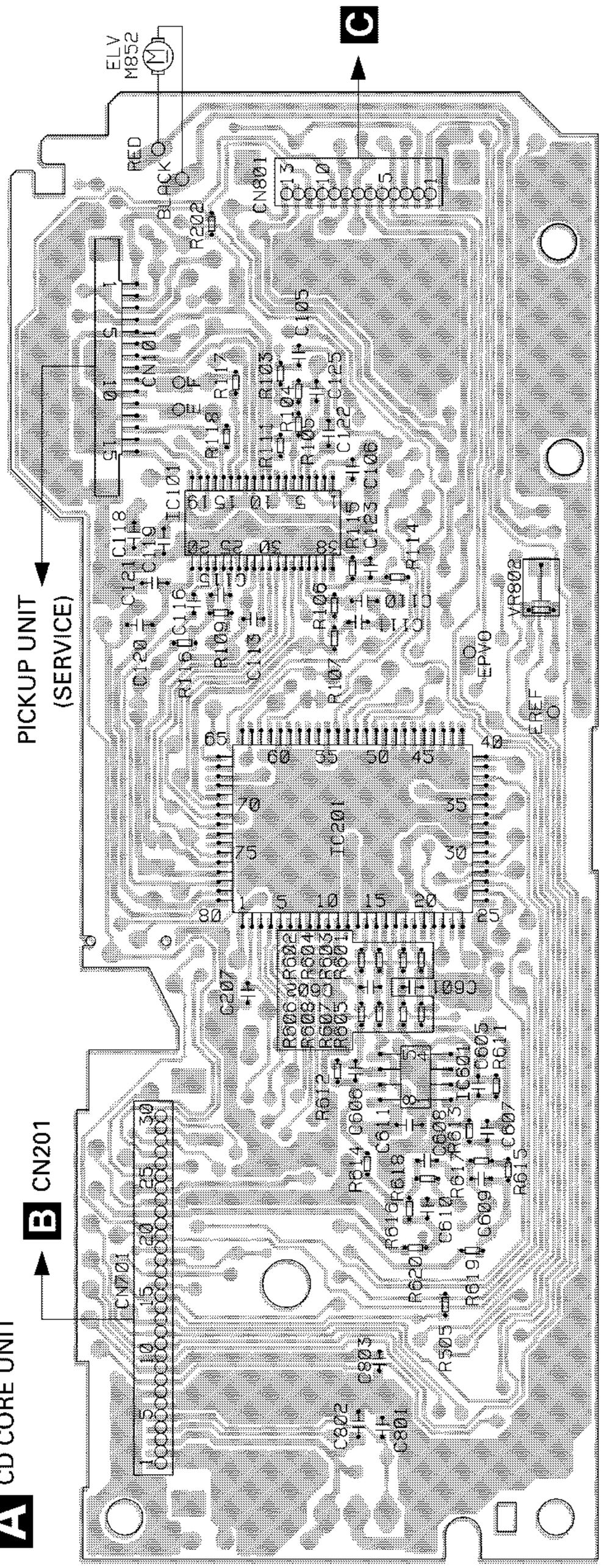
Q805

Q202

Fig. 13

4.2 CD CORE UNIT

SIDE A



MC-Service

Fig. 14

MC-Service

SIDE B

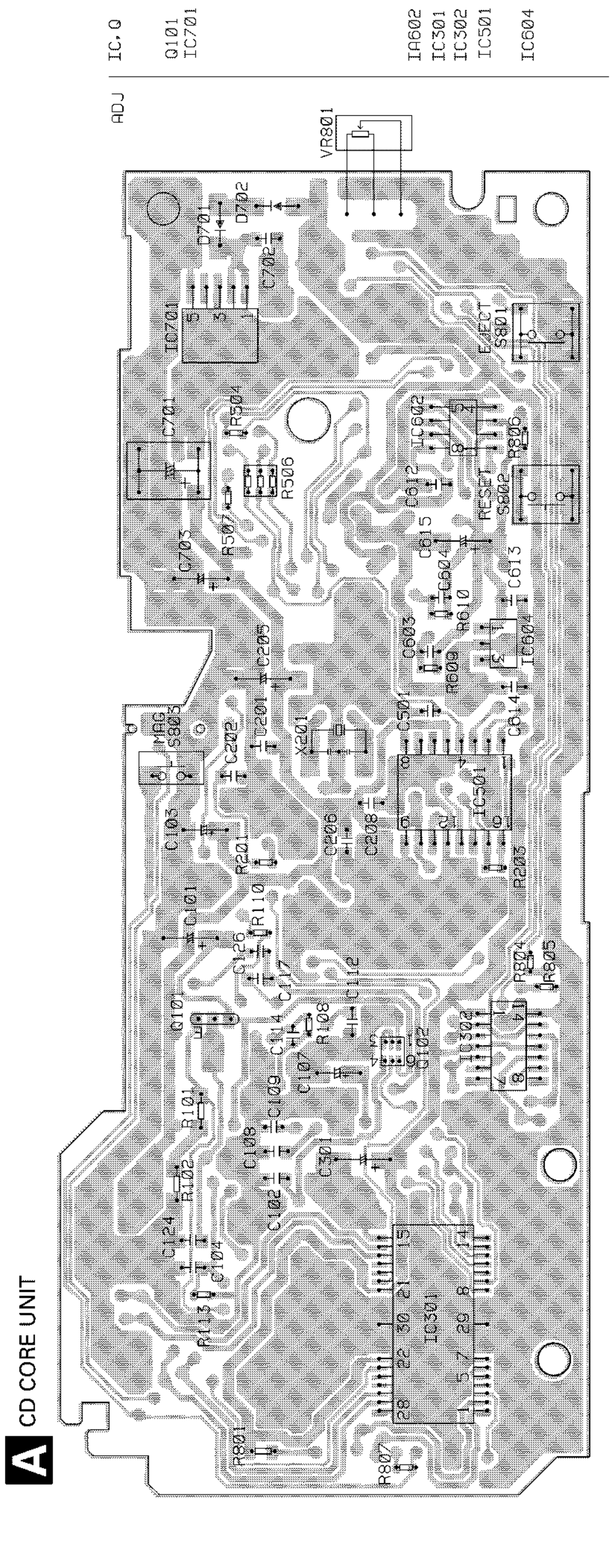


Fig. 15

4.3 ANTENNA SELECT UNIT

SIDE A

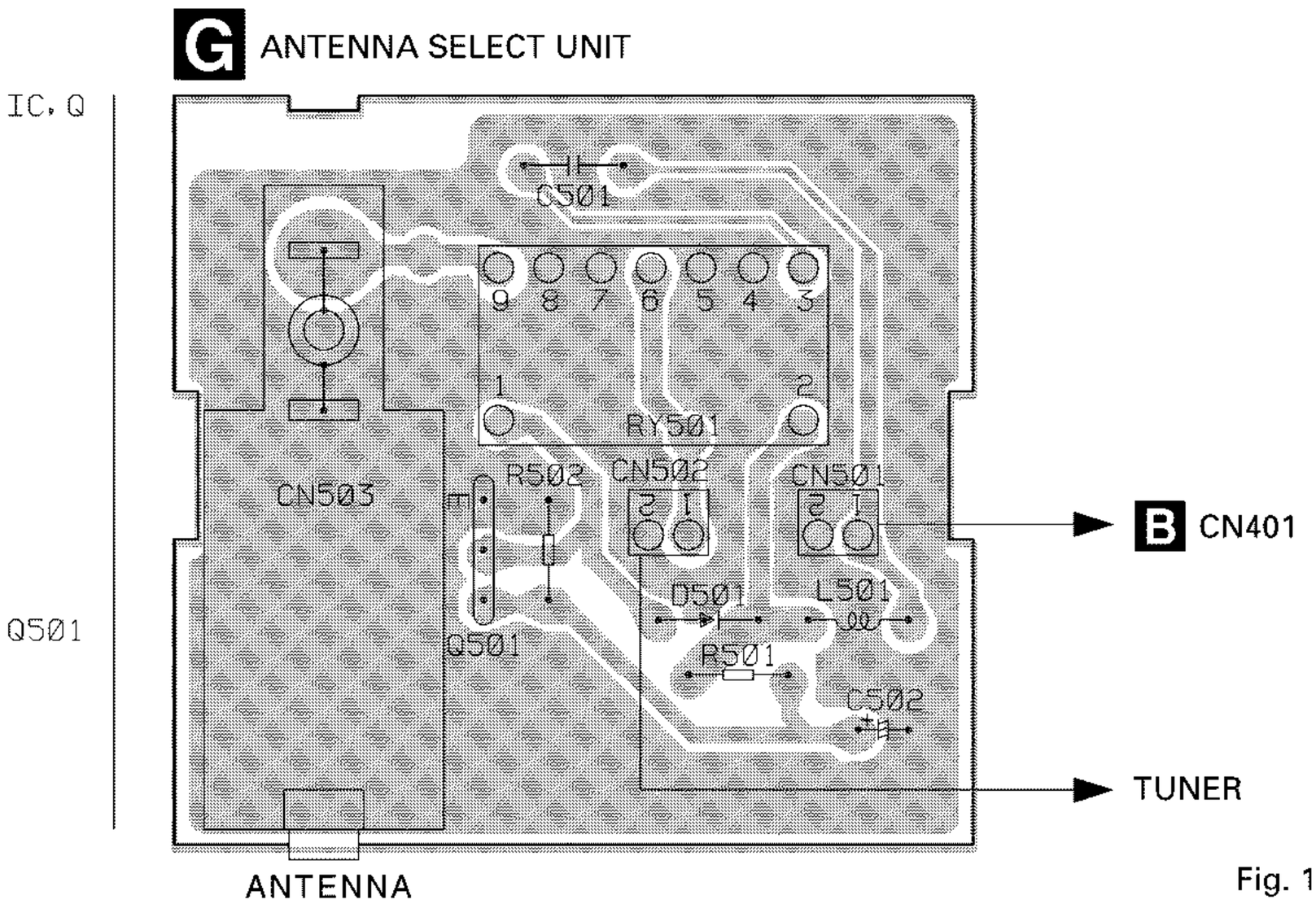


Fig. 16

4.4 PHOTO PCB

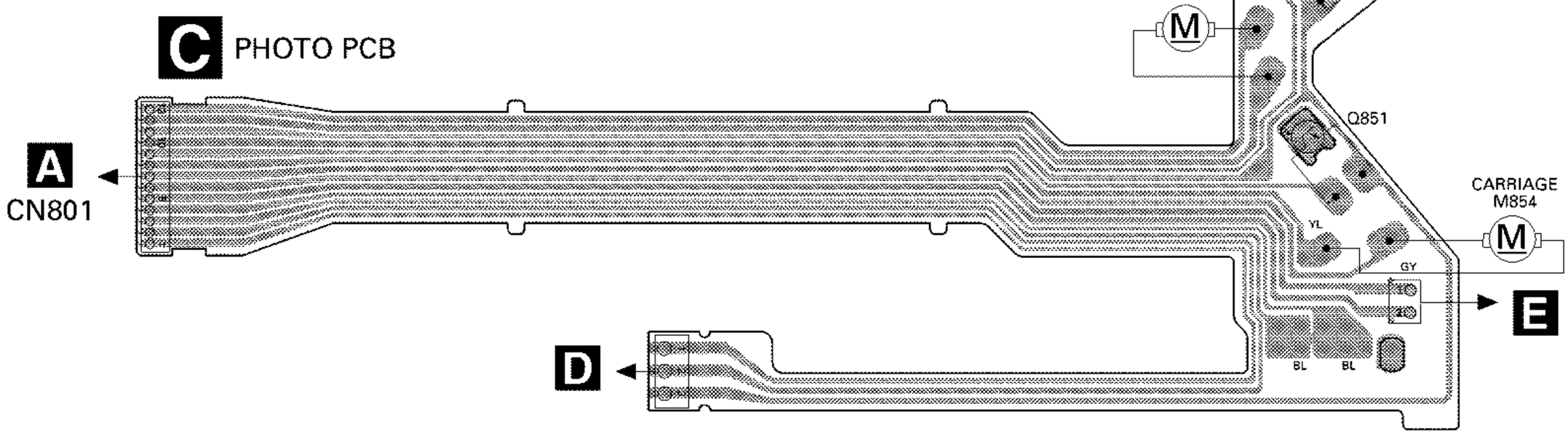


Fig. 17

4.5 PCB UNIT

SIDE A

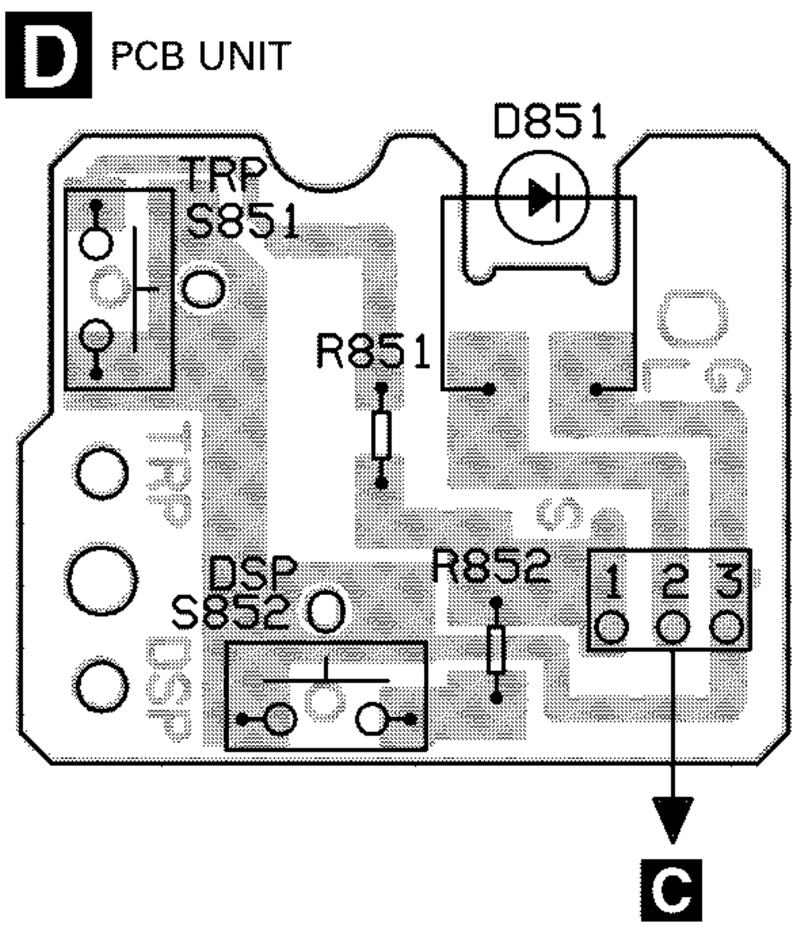


Fig. 18

4.6 MOTOR PCB

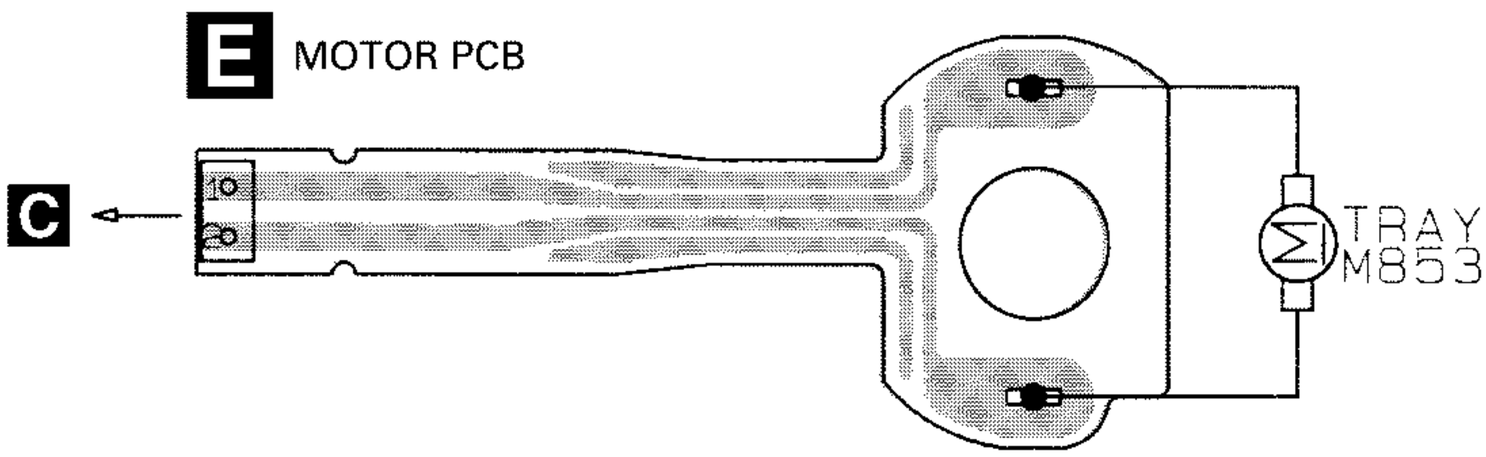


Fig. 19

4.7 DISPLAY UNIT

SIDE A

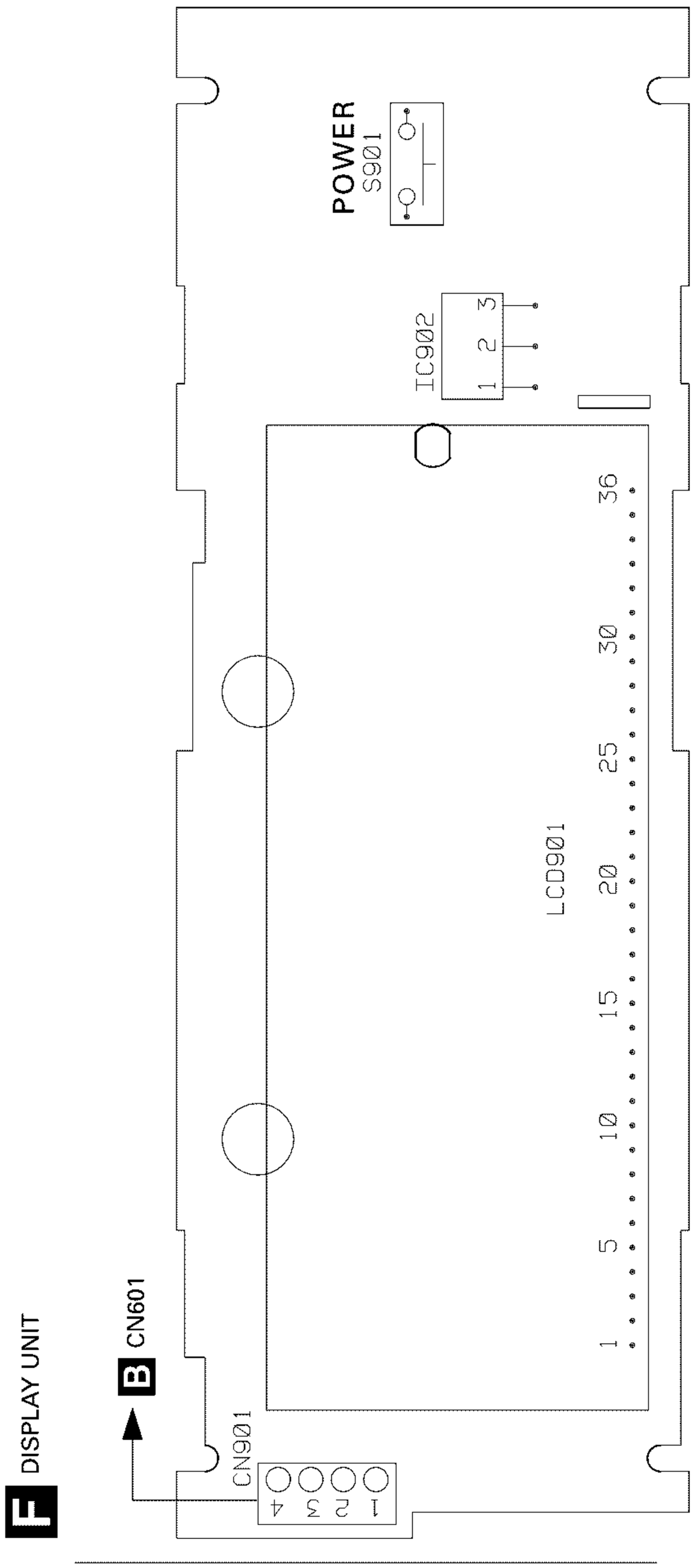


Fig. 20

MC-Service

SIDE B

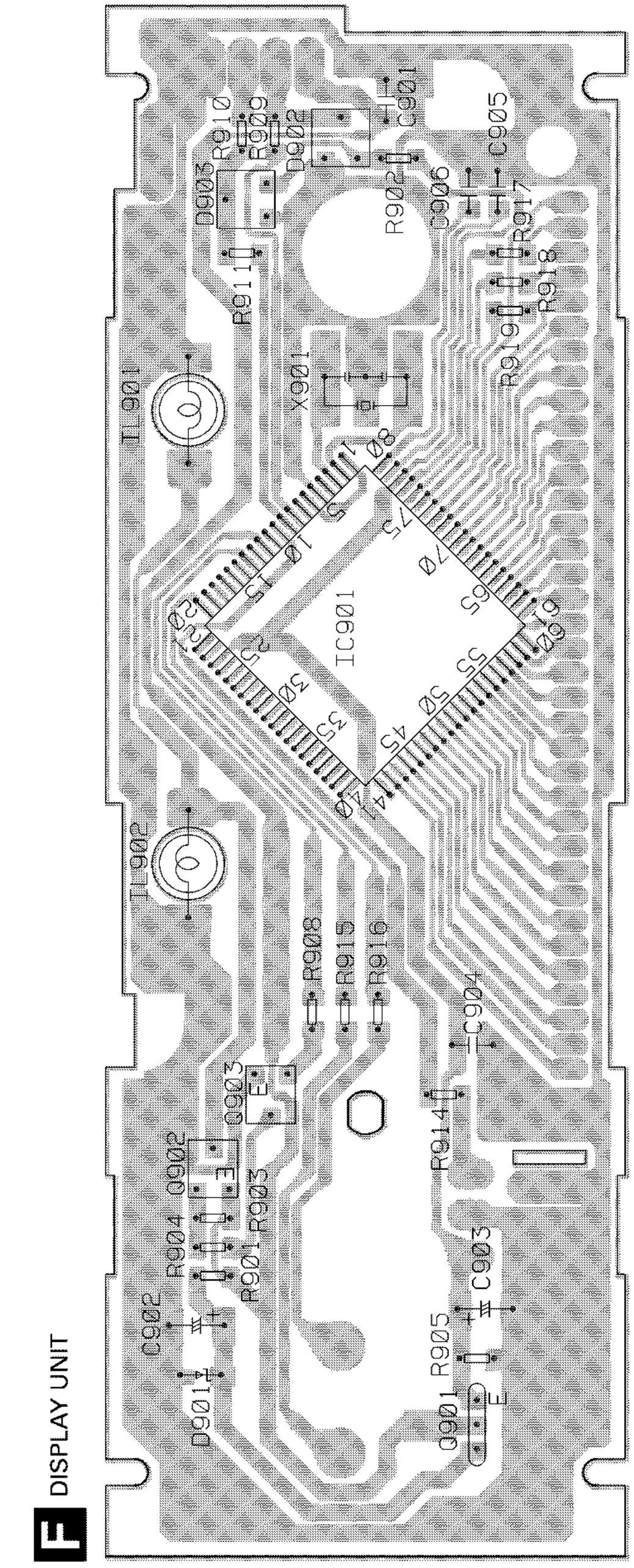

IC, Q
Q902
Q903
IC901
Q901
C901
C905
C906
R917
R918
R919
R910
R909
D902
D903
R911
X901
TL901
TL902
IC901
R908
R915
R916
R914
C904
C903
R904
D904
R903
D901
C902
R905
C901
DISPLAY UNIT

Fig. 21

5. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

  Chip Resistor

  RS1/○S○○○J,RS1/○○S○○○J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....

=====Circuit Symbol and No.	===	Part Name	Part No.
A		Unit Number : CWX2175 Unit Name : CD Core Unit	
MISCELLANEOUS			
IC	101	IC	UPC2572GS
IC	201	IC	UPD63702AGF
IC	301	IC	BA6997FM
IC	302	IC	LB1836M
IC	601	IC	BA4560F
IC	602	IC	BA4560F
IC	604	IC	TA78L05F
IC	701	IC	PQ05TZ51
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
D	701	Diode	1SR154-400
D	702	Diode	1SR154-400
X	201	Ceramic Resonator 16.93MHz	CSS1363
S	801	Switch(EJECT)	CSG1076
S	802	Switch(RESET)	CSG1076
S	803	Switch(MAG)	CSN1028
VR	802	Semi-fixed 1kΩ(B)	CCP1338
RESISTORS			
R	101		RS1/8S100J
R	102		RS1/8S120J
R	103		RS1/16S102J
R	104		RS1/16S822J
R	105		RS1/16S682J
R	106		RS1/16S183J
R	107		RS1/16S822J
R	108		RS1/16S333J
R	109		RS1/16S683J
R	110		RS1/16S134J
R	111		RS1/16S273J
R	113		RS1/16S222J
R	114		RS1/16S103J
R	115		RS1/16S103J
R	116		RS1/16S102J
R	117		RS1/16S163J
R	118		RS1/16S163J
R	201		RS1/16S104J
R	202		RS1/16S104J
R	203		RS1/16S0R0J
R	504		RS1/16S102J
R	505		RS1/16S221J
R	506		RA3C221J
R	507		RS1/16S102J
R	601		RS1/16S103J
R	602		RS1/16S103J
R	603		RS1/16S103J
R	604		RS1/16S103J
R	605		RS1/16S912J
R	606		RS1/16S912J
R	607		RS1/16S912J
R	608		RS1/16S912J
R	609		RS1/16S153J
R	610		RS1/16S153J
R	611		RS1/16S153J
R	612		RS1/16S153J
R	613		RN1/16SK5601D
R	614		RN1/16SK5601D
R	615		RN1/16SK5601D
R	616		RN1/16SK5601D
R	617		RS1/16S562J
R	618		RS1/16S562J
R	619		RS1/16S101J
R	620		RS1/16S101J
R	801		RS1/10S681J
R	804		RS1/16S622J
R	805		RS1/16S562J
R	806		RS1/16S102J
R	807		RS1/16S0R0J
CAPACITORS			
C	101		CEV101M6R3
C	102		CKSQYB104K16
C	103		CEV470M6R3
C	104		CKSQYB334K16
C	105		CCSRCH330J50
C	106		CKSRYB103K25
C	107		CEV4R7M35
C	108		CKSQYB273K25
C	109		CCSRCH101J50
C	110		CKSQYB104K16
C	111		CKSRYB332K50
C	112		CKSQYB473K25
C	113		CKSRYB103K25
C	114		CKSRYB391K50
C	115		CCSRCH121J50
C	116		CKSRYB682K25
C	117		CKSQYB333K25
C	118		CKSQYB334K16
C	119		CKSQYB334K16
C	120		CKSQYB224K16
C	121		CKSQYB224K16
C	122		CKSQYB104K16
C	123		CKSRYB472K50
C	124		CKSQYB104K16
C	125		CCSRCH6R0D50
C	126		CKSRYB153K25
C	201		CKSQYB334K16
C	202		CKSQYB104K16
C	205		CEV101M6R3
C	206		CKSQYB224K16

=====Circuit Symbol and No.	===	Part Name	Part No.
C	207		CKSRYB102K50
C	208		CKSQYB224K16
C	301		CEV101M10
C	601		CCSRCH181J50
C	602		CCSRCH181J50
C	603		CCSRCH820J50
C	604		CCSRCH820J50
C	605		CCSRCH820J50
C	606		CCSRCH820J50
C	607		CKSRYB222K50
C	608		CKSRYB222K50
C	609		CCSRCH331J50
C	610		CCSRCH331J50
C	611		CKSQYB104K16
C	612		CKSQYB104K16
C	613		CKSQYB104K16
C	614		CKSQYB104K16
C	615		CEV101M10
C	701	22µF/6.3V	CCH1233
C	702		CKSQYB334K16
C	703		CEV101M6R3
C	801		CKSRYB103K25
C	802		CKSQYB104K16
C	803		CKSRYB103K25

B Unit Number : CWX2199(CDX-FM637S/X1N/EW)
Unit Number : CWX2198(CDX-FM637S/X1N/ES)
Unit Name : System Unit

MISCELLANEOUS

IC	201	IC	BU4066BCF
IC	301	IC	BA1404F
IC	302	IC	BA4560F
IC	401	IC	BU2611FS
IC	601	IC	PD5397C
IC	701	IC	LH5116HN-10Y
IC	801	IC	PAJ002A
IC	802	IC	NJM78L06A
Q	201	Transistor	IMD3A
Q	202	Transistor	IMH3A
Q	301	Transistor	DTC143TK
Q	401	Transistor	IMX1
Q	402	Transistor	2SC2059K
Q	403	Transistor	2SC2059K
Q	404	Transistor	2SC2059K
Q	601	Transistor	DTA144EK
Q	701	Transistor	DTC114EK
Q	801	Transistor	2SD2396
Q	802	Transistor	IMD3A
Q	803	Transistor	IMX1
Q	804	Transistor	2SB1238
Q	805	Transistor	2SB710A
Q	806	Transistor	2SB710A
Q	807	Transistor	IMH10A
D	301	Diode	MA110
D	302	Diode	RB706D40
D	401	Diode	DA204K
D	402	Diode	KV1440
D	403	Diode	MA110
D	701	Diode	1SS356
D	801	Diode	1SR139-200
D	802	Diode	1SR139-200
D	803	Diode	UDZ5R1(B)
D	804	Diode	MA110
D	805	Diode	UDZ5R1(B)
D	806	Diode	UDZ3R3(B)
L	201	Filter	CTF1333
L	202	Filter	CTF1333
L	301		LCTA2R2J3225
L	302	Inductor	CTF1302

=====Circuit Symbol and No.	===	Part Name	Part No.
L	401		LCTA2R2J3225
L	402	Coil	CTC1079
L	403	Inductor	LCTA2R2J3225
L	404	Inductor	LCTA1R0J3225
L	405	Inductor	LCTA101J3225
L	406	Inductor	LCTAR68J3225
X	301	Resonator 38.000kHz	CSS1372
X	401	Crystal Resonator 7.2MHz	CSS1030
X	601	Resonator 6.14MHz	CSS1336
VR	301	Semi-fixed 47kΩ(B)	CCP1233
VR	302	Semi-fixed 33kΩ(B)	CCP1232

RESISTORS

R	201	RS1/10S471J
R	202	RS1/10S471J
R	203	RS1/10S472J
R	204	RS1/10S472J
R	205	RS1/10S361J
R	206	RS1/10S361J
R	207	RS1/10S225J
R	208	RS1/10S225J
R	209	RS1/10S223J
R	210	RS1/10S223J
R	211	RS1/10S681J
R	212	RS1/10S681J
R	213	RS1/10S112J
R	214	RS1/10S112J
R	215	RS1/10S362J
R	216	RS1/10S362J
R	301	RS1/10S362J
R	302	RS1/10S823J
R	303	RS1/10S681J
R	304	RS1/10S392J
R	305	RS1/10S102J
R	306	RS1/10S392J
R	307	RS1/10S102J
R	308	RS1/10S392J
R	309	RS1/10S513J
R	310	RS1/10S103J
R	311	RS1/10S103J
R	312	RS1/10S103J
R	313	RS1/10S513J
R	314	RS1/10S101J
R	315	RS1/10S221J
R	316	RS1/10S104J
R	317	RS1/10S104J
R	318	RS1/10S683J
R	319	RS1/10S123J
R	320	RS1/10S472J
R	321	RS1/10S393J
R	401	RS1/10S223J
R	402	RS1/10S681J
R	403	RS1/10S362J
R	404	RS1/10S242J
R	405	RS1/10S822J
R	406	RS1/10S103J
R	407	RS1/10S103J
R	408	RS1/10S560J
R	409	RS1/10S103J
R	410	RS1/10S103J
R	411	RS1/10S332J
R	412	RS1/10S101J
R	413	RS1/10S222J
R	414	RS1/10S104J
R	415	RS1/10S244J
R	416	RS1/10S154J
R	417	RS1/10S152J
R	418	RS1/10S331J

Circuit Symbol and No.		Part Name	Part No.
R	419		RS1/10S122J
R	420		RS1/8S470J
R	601		RS1/10S433J
R	602		RS1/10S103J
R	603		RA3C103J
R	604		RA3C222J
R	605		RS1/10S102J
R	606		RS1/10S102J
R	607		RS1/10S104J
R	608		RS1/10S104J
R	609		RS1/10S222J
R	610		RS1/10S104J
R	611		RS1/10S222J
R	612		RS1/10S104J
R	613		RS1/10S102J
R	614		RS1/10S103J
R	615		RS1/10S0R0J
R	617		RS1/10S0R0J
R	620		RS1/10S104J
R	621		RS1/10S513J
R	622		RS1/10S103J
R	624		RS1/10S0R0J
R	625		RS1/10S222J
R	626		RS1/10S823J
R	627		RS1/10S222J
R	628		RS1/10S473J
R	629		RS1/10S332J
R	630		RS1/10S332J
R	631		RS1/10S332J
R	701		RS1/10S104J
R	702		RS1/10S101J
R	801		RS1/10S183J
R	802		RS1/10S822J
R	803		RS1/10S204J
R	804		RS1/10S913J
R	805		RS1/10S391J
R	806		RS1/10S681J
R	807		RS1/4S121J
R	808		RS1/10S750J
R	809		RS1/10S102J
R	810		RS1/10S152J
R	811		RS1/10S103J
R	812		RS1/8S3R9J
R	813		RS1/10S102J
R	815		RS1/10S104J
R	816		RS1/10S104J
R	817		RS1/10S223J
R	818		RS1/10S152J
R	819		RS1/10S223J
R	820		RS1/10S152J
R	821		RS1/10S560J
R	822		RS1/10S181J
R	823		RS1/10S222J

CAPACITORS

Circuit Symbol and No.		Part Name	Part No.
C	201		CEJA330M6R3
C	202		CEJA330M6R3
C	203		CKSQYB103K50
C	204		CKSQYB103K50
C	205		See Contrast table
C	206		See Contrast table
C	207		See Contrast table
C	208		See Contrast table
C	209		CSZS1R0M10
C	210		CSZS1R0M10
C	211		CKSQYB102K50
C	212		CKSQYB102K50
C	213		CKSQYB102K50
C	214		CKSQYB102K50
C	301		CEAL100M16
C	302		CKSQYB103K50
C	303		CCSQCH120J50
C	304		CEAL220M16
C	305		CKSQYB104K16
C	306		CKSQYB103K50
C	307		CCSQCH101J50
C	308		CEALR47M50
C	309		CKSQYB103K50
C	310		CEAL100M16
C	311		CCSQCH160J50
C	312		CEAL100M16
C	313		CKSQYB104K16
C	314		CKSYB105K16
C	315		CEAL220M16
C	316		CKSQYB104K16
C	317		CCSQCH271J50
C	318		CCSQCH162J50
C	319		CEJA100M16
C	401		CCSQCH270J50
C	402		CCSQCH270J50
C	403		CKSQYB104K16
C	404		CKSQYB102K50
C	405		CKSQYB473K16
C	406		CEALNP330M10
C	407		CEAL470M6R3
C	408		CKSQYB104K16
C	409		CCSQCH180J50
C	410		CCSQCH100D50
C	411		CCSQCH330J50
C	412		CCSQCH180J50
C	413		CCSQCH1R0C50
C	414		CKSQYB103K50
C	415		CCSQCH1R0C50
C	416		CKSQYB103K50
C	417		CKSQYB103K50
C	418		CCSQCH3R0C50
C	419		CKSQYB103K50
C	420		CEJA220M16
C	421		CKSQYB473K50
C	601		CKSQYB103K50
C	602		CKSQYB102K50
C	603		CKSQYB104K16
C	604		CKSQYB473K16
C	605		CKSQYB473K16
C	606		CKSQYB102K50
C	607		CKSQYB102K50
C	701		CKSQYB103K50
C	702		CEJA221M6R3
C	801		CEJA100M16
C	802	470µF/16V	CCH1183
C	803		See Contrast table
C	804		See Contrast table
C	805	470µF/16V	CCH1183
C	806	470µF/16V	CCH1183
C	807		CKSQYB473K16
C	808		CKSQYB103K50
C	809		CKSQYB103K50
C	810		CEJA220M16
C	811		CKSQYB104K16
C	812		CKSQYB103K50

=====Circuit Symbol and No.	===	Part Name	Part No.
C	813		CKSQYB103K50
C	814		CKSQYB103K50
C	815		CKSQYB103K50
C	816		CSZST220M16
C	817		CKSQYB334K16
C	818		CKSQYB104K16
C	819		CEAS221M10
C	820		CEJA101M10
C	821		CEAS331M6R3

CONTRAST TABLE of SYSTEM UNIT
CDX-FM637S/X1N/EW and CDX-FM637S/X1N/ES are constructed the same except for the following:

Circuit Symbol and Description	FM637S/X1N/EW	FM637S/X1N/ES
C205	CKSQYB272K50	CKSQYB392K50
C206	CKSQYB272K50	CKSQYB392K50
C207	CKSQYB222K50	CKSQYB332K50
C208	CKSQYB222K50	CKSQYB332K50
C803	Not used	CKSQYB104K50
C804	CKSQYB104K50	Not used

F Unit Number :
Unit Name : Display Unit

MISCELLANEOUS

IC	901	IC	PD6122A
IC	902	IC	SBX8035-H
Q	901	Transistor	2SD1767
Q	902	Transistor	2SB710A
Q	903	Transistor	DTC114EK
D	901	Diode	UDZ5R6(B)
D	902	Diode	MA153
D	903	Diode	MA153
X	901	Ceramic Resonator 4.9152MHz	CSS1084
S	901	Switch(POWER)	CSG-253
IL	901	Lamp 14V 40mA	See Contrast table
IL	902	Lamp 14V 40mA	See Contrast table
LCD	901	LCD	CAW1273

RESISTORS

R	901	RS1/10S102J
R	902	RS1/10S0R0J
R	903	RS1/10S223J
R	904	RS1/10S332J
R	905	RS1/10S332J
R	908	RS1/10S0R0J
R	909	RS1/10S471J
R	910	RS1/10S0R0J
R	911	RS1/10S471J
R	914	RS1/10S0R0J
R	915	RS1/10S471J
R	916	RS1/10S471J
R	917	RS1/10S0R0J
R	918	RS1/10S0R0J
R	919	RS1/10S0R0J

CAPACITORS

C	901	CKSQYB473K50
C	902	CSZSR100M6R3
C	903	CSZSR100M6R3
C	904	CKSQYB104K16
C	905	CKSQYB104K16
C	906	CKSQYB104K16

=====Circuit Symbol and No.	===	Part Name	Part No.

CONTRAST TABLE of DISPLAY UNIT
CDX-FM637S/X1N/EW and CDX-FM637S/X1N/ES are constructed the same except for the following:

Circuit Symbol and Description		FM637S/X1N/EW	FM637S/X1N/ES
IL901	Lamp	CEL1539	CEL1538
IL902	Lamp	CEL1539	CEL1538

G Unit Number : CWX2200
Unit Name : Antenna Select Unit

MISCELLANEOUS

Q	501	Transistor	2SC1740S
D	501	Diode	1SS133
L	501	Ferri-Inductor	LAU4R7K
RY	501		CSR1014

RESISTORS

R	501	RD1/4PU683J
R	502	RD1/4PU103J

CAPACITORS

C	501	CKCYB102K50
C	502	CEAL101M10

C Unit Number :
Unit Name : Photo PCB

Q	851	Photo-transistor	PT4800
S	853	Switch(HOME)	CSN1012

D Unit Number :
Unit Name : PCB Unit

S	851	Switch(TRP)	CSN1033
S	852	Switch(DSP)	CSN1033
R	851		RS1/8S473J
R	852		RS1/8S753J

E Unit Number :
Unit Name : Motor PCB

M	853	Motor Unit(TRAY)	CXA9139

Miscellaneous Parts List

D	851	LED	CN504-2
M	851	Motor Unit(SPINDLE)	CXA9371
M	852	Motor Unit(ELV)	CXA9146
M	854	Motor Unit(CARRIAGE)	CXA9131
VR	801	Volume 10kΩ	CCW1021
		Pickup Unit(Service)	CXX1235

6. ADJUSTMENT

6.1 MODULATOR ADJUSTMENT

● Connection Diagram

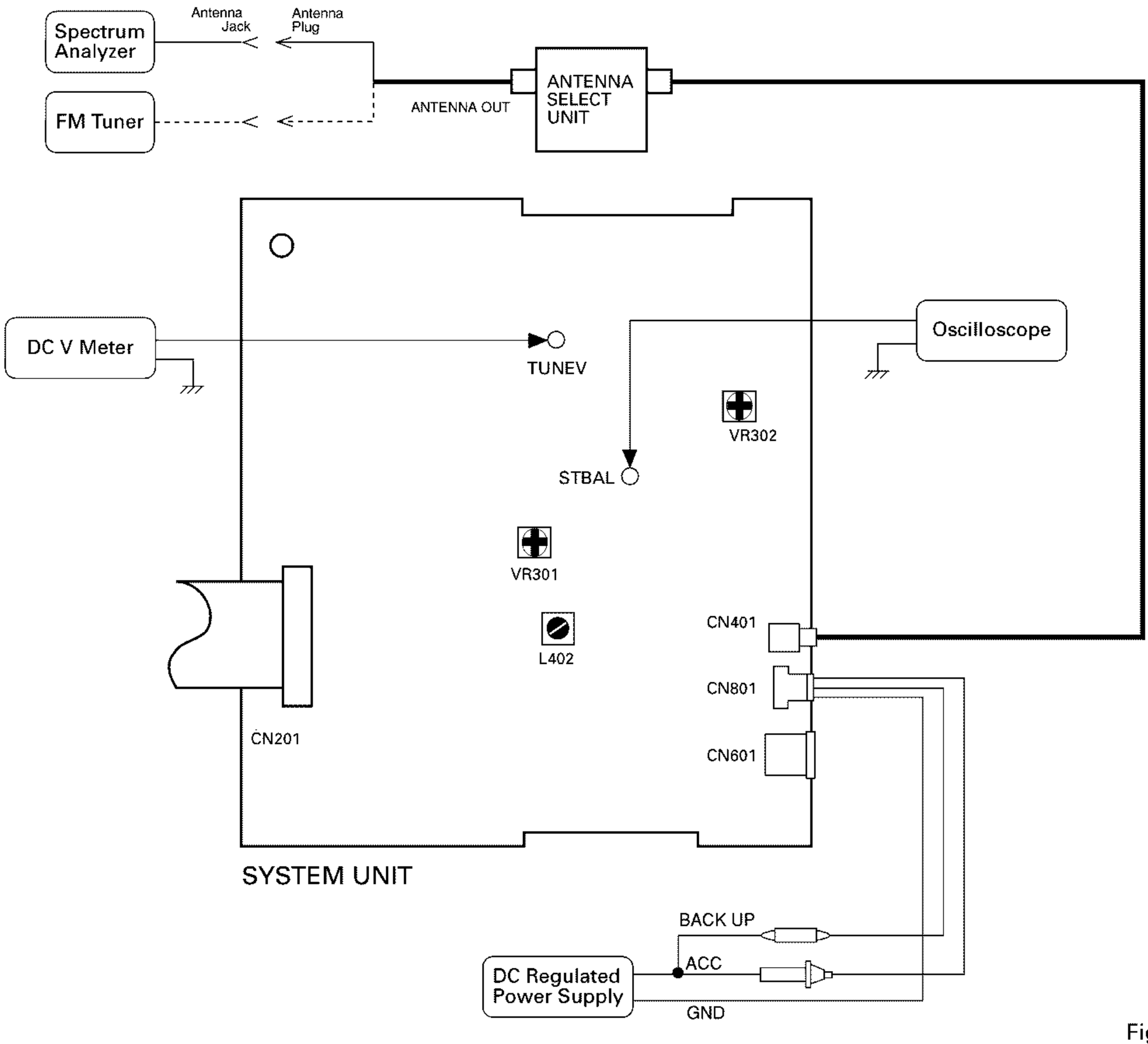


Fig. 22

● Adjustment

	CD Output	Adjusting Point	Adjustment Method (Switch Position)
Tuning Voltage Adjustment	No signal	L402	DC V Meter: 3.0V±0.1V
Balance Adjustment	No signal	VR301	Oscilloscope: 38kHz signal becomes minimum
Modulation Adjustment	400Hz 0dB	VR302	Spectrum Analyzer : 135±5kHz (Modulation Level : 7)
RF Level Adjustment	No signal	———	Spectrum Analyzer: 70dBμV±5dB

6.2 CHECKING THE GRATING

● Checking the Grating After Changing the Pickup Unit

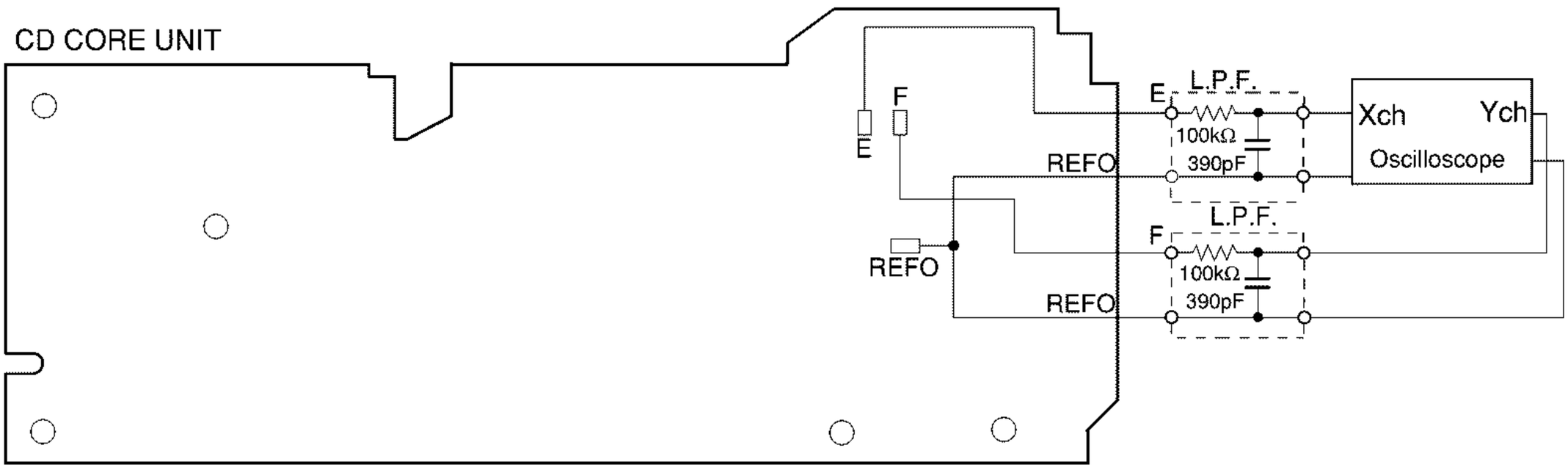
·**Note :**
Unlike previous CD mechanism modules the grating angle of the pickup unit cannot be adjusted after the pickup unit is changed. The pickup unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted pickup unit for the CD mechanism module. Changing the pickup unit is thus best considered as a last resort. However, if the pickup unit must be changed, the grating should be checked using the procedure below.

·**Purpose :**
To check that the grating is within an acceptable range.

·**Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

·**Method :**

·Measuring Equipment	·Oscilloscope, Two L.P.F.
·Measuring Points	·E, F, REFOUT
·Disc	·ABEX TCD-784
·Mode	·TEST MODE



·**Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the **TRACK UP** and **TRACK DOWN** buttons, move the pickup unit to the innermost track.
3. Press key **ITS** to close focus, the display should read "91". Press key **PAUSE** to implement the tracking balance adjustment the display should now read "81". Press key **ITS** 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the pickup unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

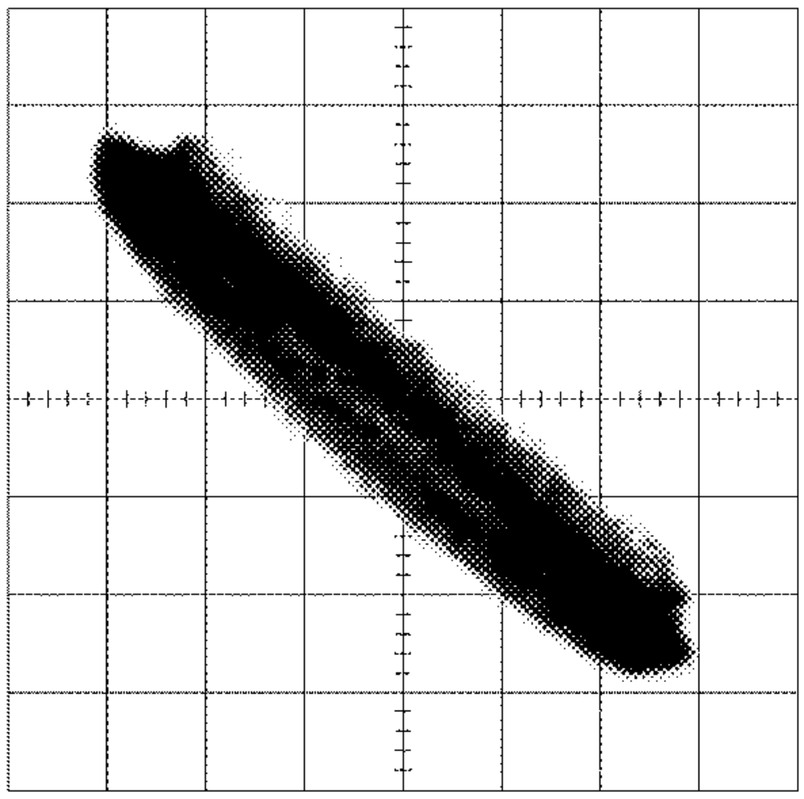
·**Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

·**Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

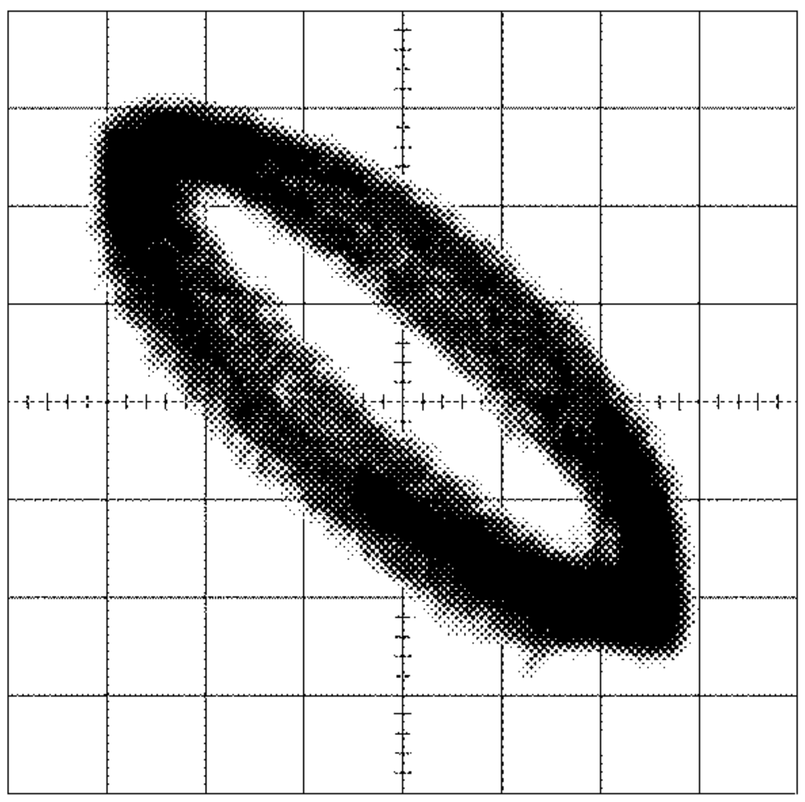
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

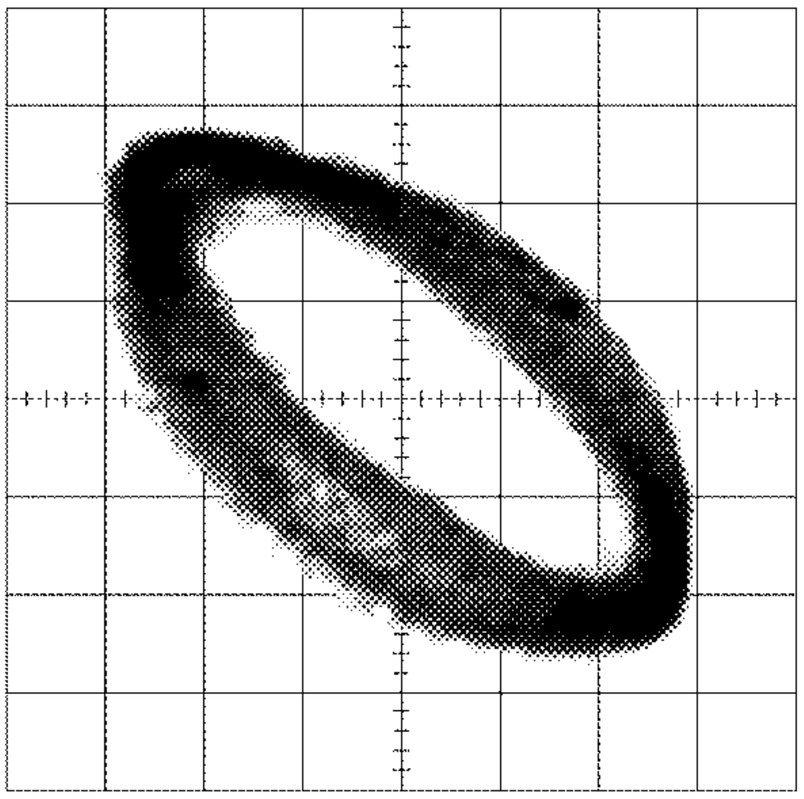
0°



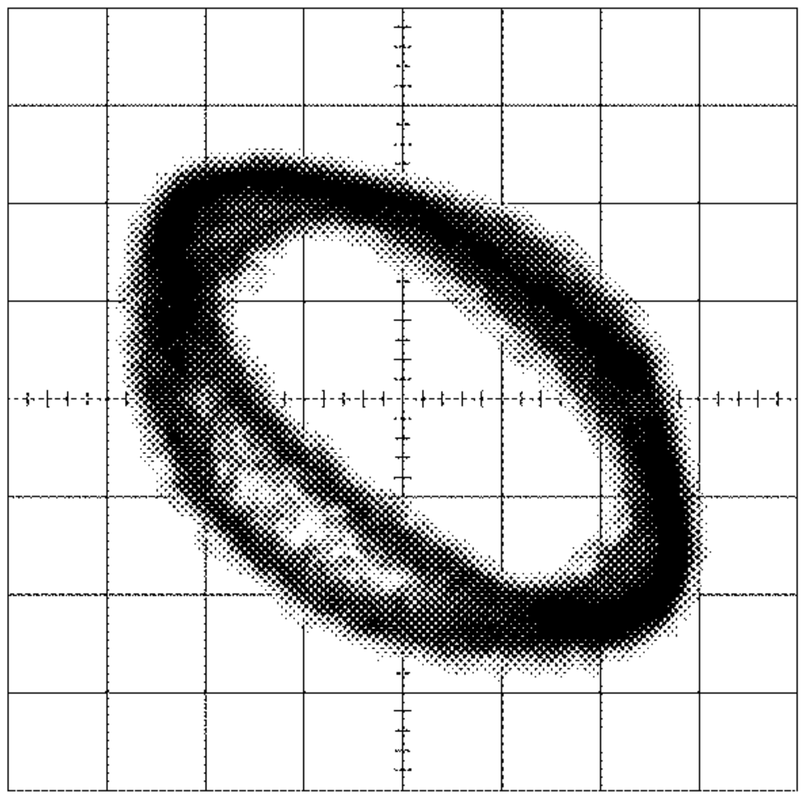
30°



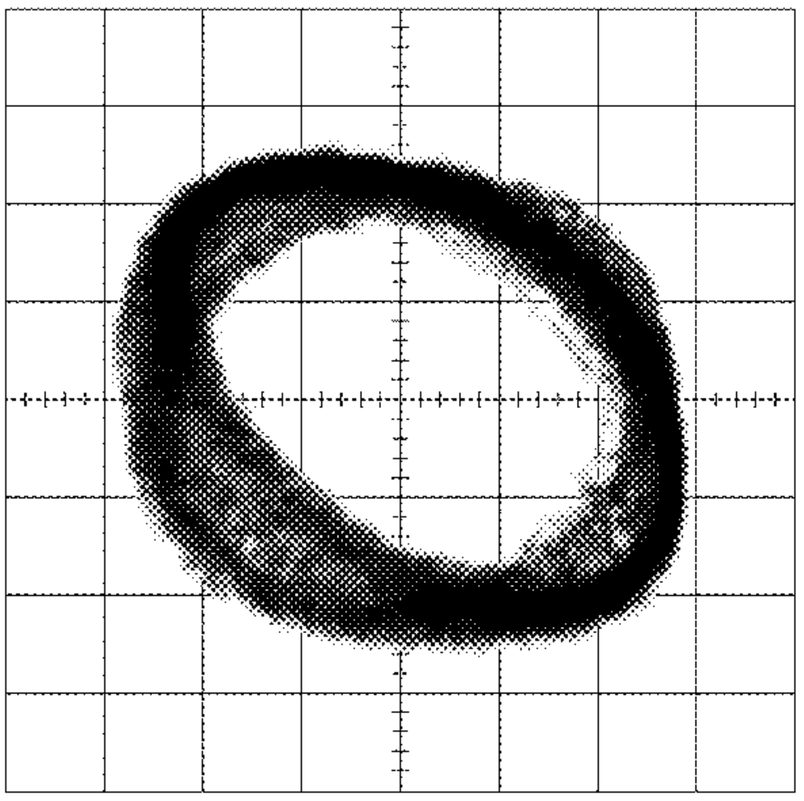
45°



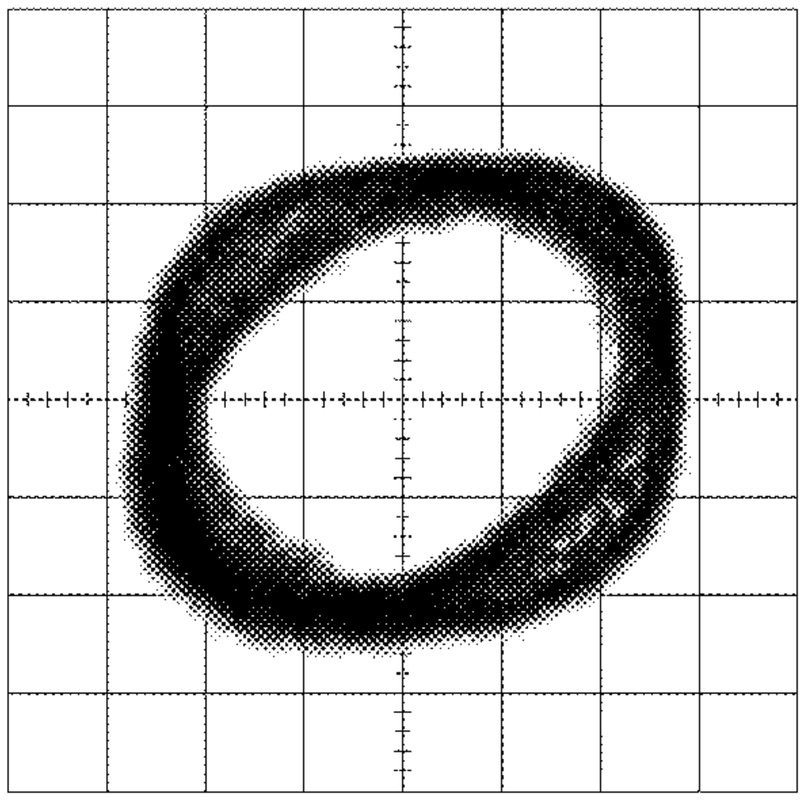
60°



75°



90°



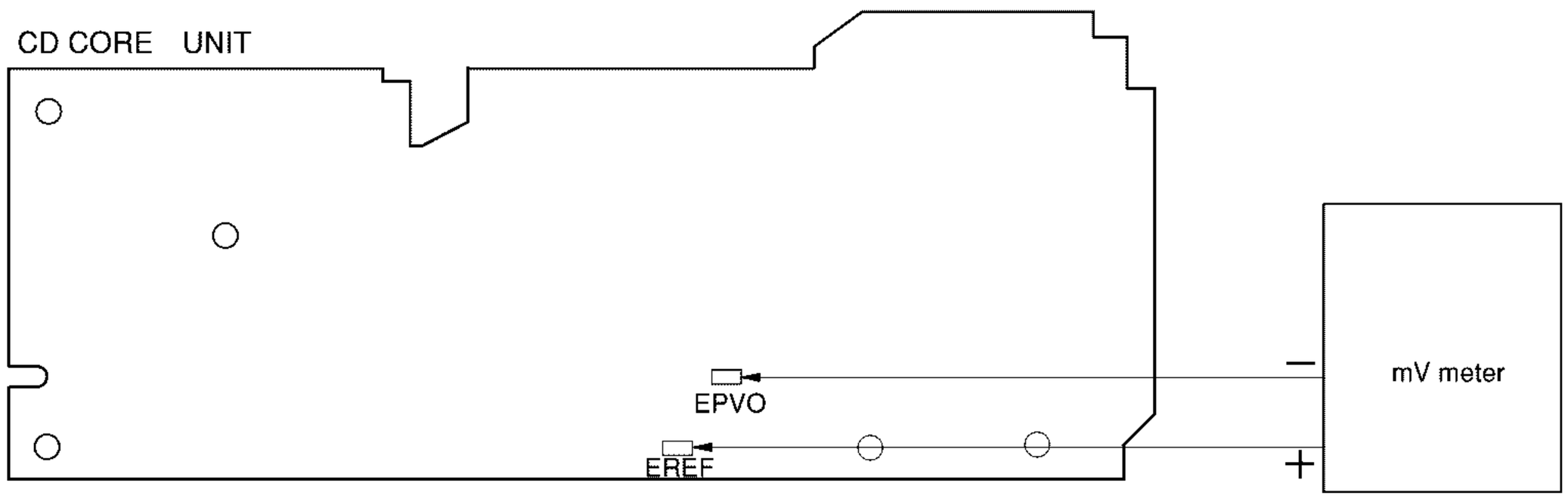
6.3 ADJUSTMENT OF ELEVATION WHEN THE CD CORE UNIT HAS BEEN REMOVED FOR MAINTENANCE

● Adjustment when Error Code 60 is Displayed because of Malfunctioning Elevation

·**Note :**
Unlike the conventional mechanisms, the new mechanism detects the height of the stage using slide-variable resistance.
To absorb dislocation of the stage height caused by differences in the mechanism and the CD core unit, adjustment must be made for each CD-mechanism module using a variable resistor.
Normally, readjustment is not needed, as this has been adjusted at the factory. However, adjustment of elevation is required according to the procedure explained below if an elevation error has occurred or if the CD core unit has been removed.

·**Purpose :**
To adjust and confirm whether or not elevation operates correctly.

·**Adjustment method :**
·Measuring equipment: Millivoltmeter
·Measuring points : EREF, EPVO
·Setting : Without a magazine in Test mode
With the mechanism placed upside-down (Place the CD mechanism module so that the CD core unit is above.)



·**Confirmation procedure**

1. Enter Test mode, then select Multi-CD player.

2. Press key **MODE** to enter Mechanism Test mode.

3. Press key **MANUAL** twice to specify the amount of movement.

The amount of movement changes each time key **MANUAL** is pressed.

maximum movement
Key MANUAL
during movement
Key MANUAL
Key MANUAL
minimum movement

Examples of display

DISC 0X TR--

DISC 17 TR-00

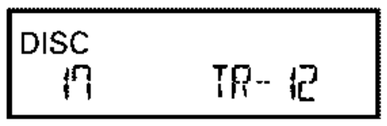
DISC 17 TR-02

DISC 17 TR-01

DISC 17 TR-00

Examples of display

4. Press key **ITS** to set ELV/TRAY mode to TRAY.



5. Press key **TRACK UP** to release the clamp and return the tray to the magazine.

Release the clamp

6. Press key **ITS** to enter Elevation Move mode.

7. Use key **TRACK UP/TRACK DOWN** to operate elevation and set it to the graduation of the fourth step (Fig. 23).

8. Make the adjustment.
   Use VR802 to adjust the difference in potential between EREF and EPVO to 0 ±20 mV.

9. When adjustment is completed, press key **LIST** to exit Mechanism Test mode.

10. Confirm operation of the mechanism.
    Place the mechanism horizontally (CD core unit below). Take care not to short-circuit the P.C.B.

11. Confirm the height of the stage. Use the DISC UP/DOWN key to select disc No.4.

    Check if the stopper bend of the clamp lever is engaged in the groove of the frame stopper (Fig. 24-26).

·**Note :**
The stopper bend will be pressed downward into the groove for final clamping. Confirm the engagement position of the stopper bend.

·If the stopper bend is engaged in the center and pressed downward, adjustment is completed. Go to step 15.

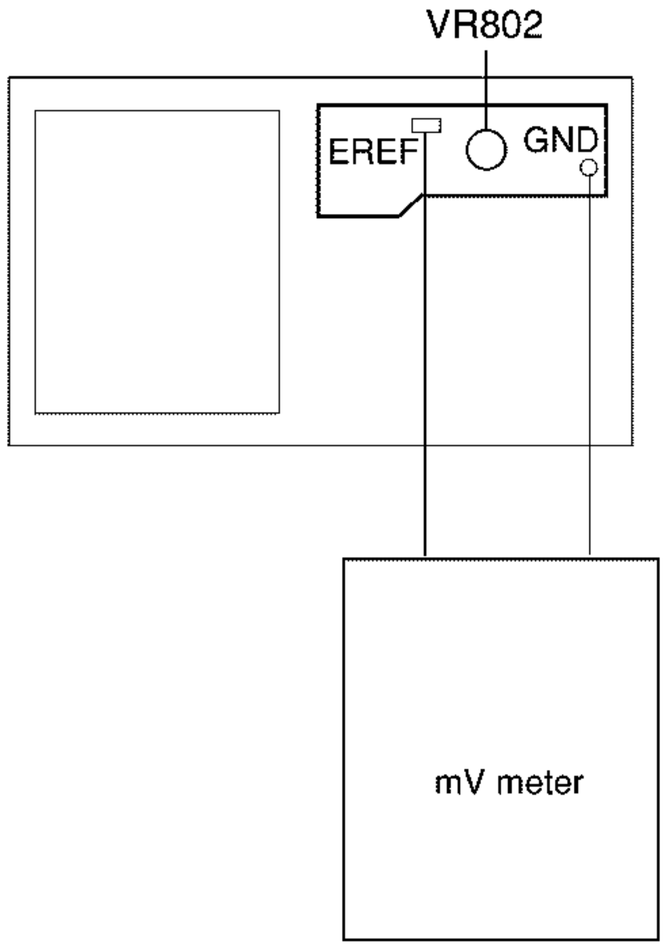
·If the stopper bend is dislocated, check the amount of dislocation by following steps 12 to 14.

12. To see the amount of dislocation, place the mechanism upside-down.
    If the stopper bend has been dislocated in the direction of the first CD, turn VR802 to the left(Fig. 24).

    To lower the stage toward the sixth step by 0.1 mm, reduce the voltage of EREF (adjusted in step 8) by 20 mV.

    If the stopper bend has been dislocated in the direction of the sixth CD, turn VR802 to the right(Fig. 26).

    To raise the stage toward the first step by 0.1 mm, increase the voltage of EREF (adjusted in step 8) by 20 mV.



13. Place the mechanism horizontal. Go back to step 11 to reconfirm the stage height.

14. When adjustment of the stage height is completed, proceed as follows:

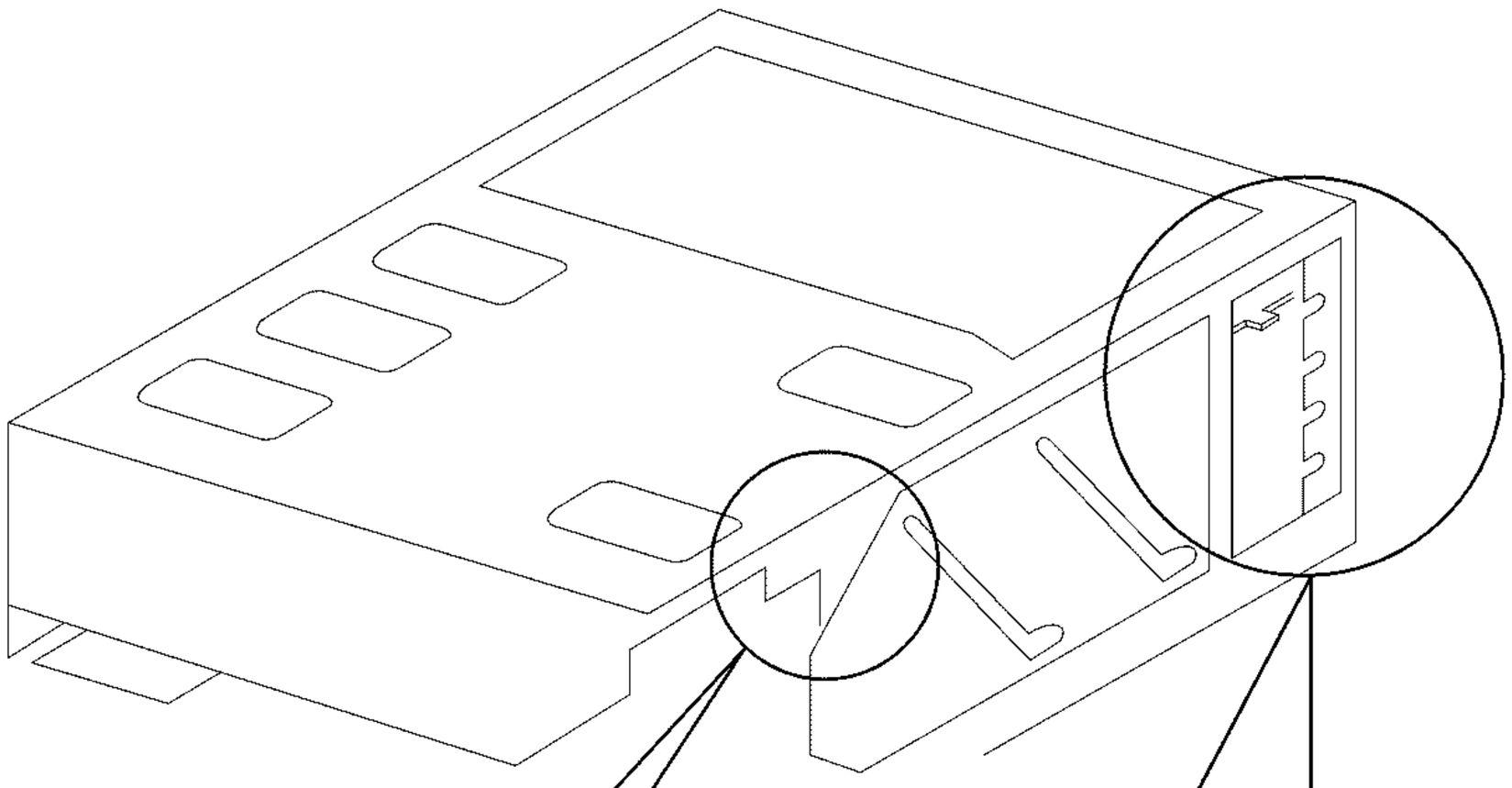
15. Press the **EJECT** switch.

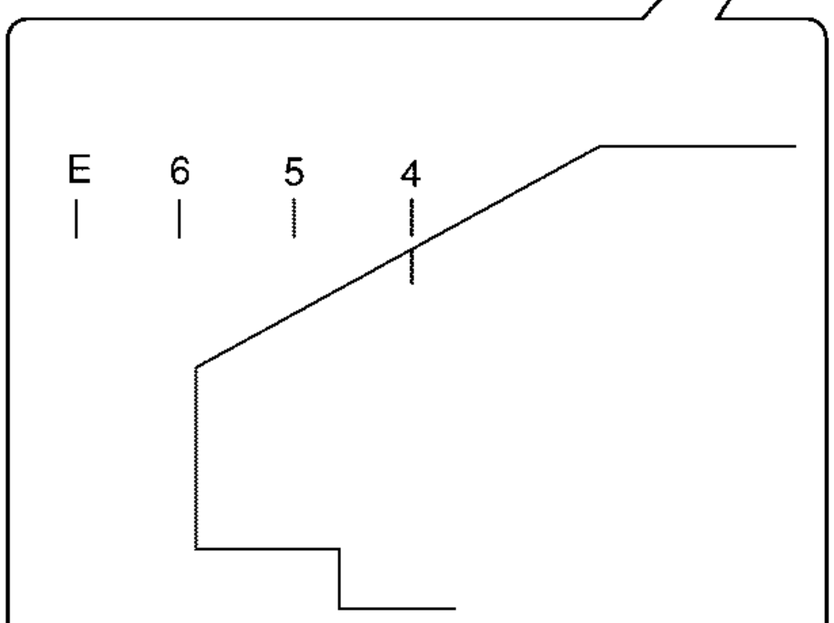
16. Once operation of the mechanism has stopped, turn the power OFF.

17. Wait more than one minute after the power is turned off, then turn the power ON and insert a magazine.

18. Check if the mechanism operates correctly with the first and fourth CDs.

19. If the mechanism operates properly, adjustment is completed. If the mechanism operates improperly, make the adjustment again.

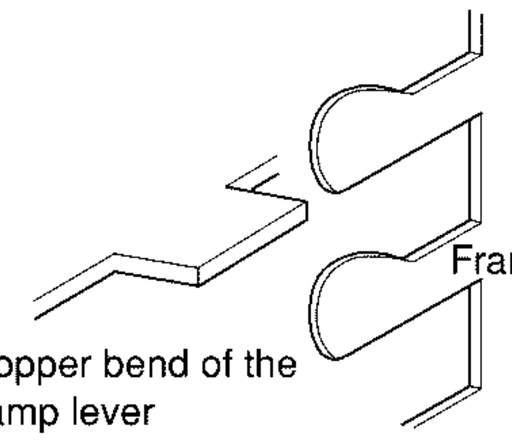




Adjust to the graduation of the fourth CD.

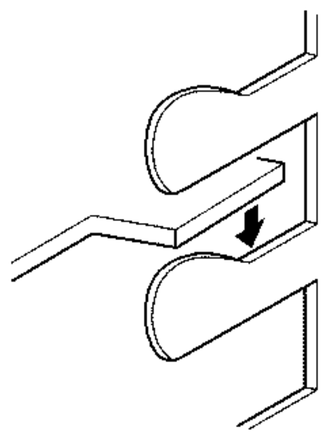
Fig. 23

NG



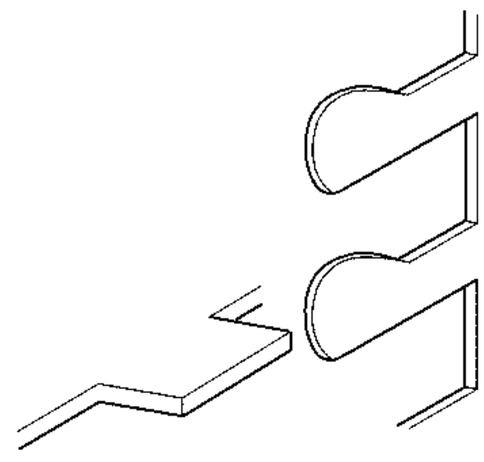
Dislocated toward the first CD.
Fig. 24

OK



Engaged in the center and pressed downward.
Fig. 25

NG



Dislocated toward the sixth CD.
Fig. 26

7. GENERAL INFORMATION

7.1 PARTS

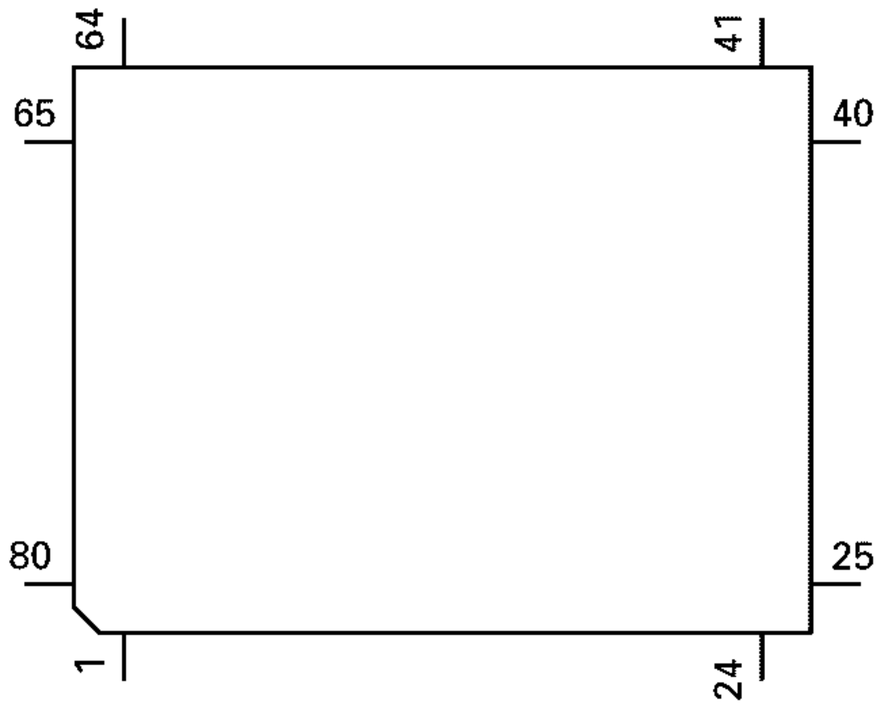
7.1.1 IC

● **Pin Functions (UPD63702AGF)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{\text{RST}}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{\text{STB}}$ active and set to address register AO="H": $\overline{\text{STB}}$ active and set to parameter
4	$\overline{\text{STB}}$	I	Signal to latch serial data within the LSI
5	$\overline{\text{SCK}}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{\text{XTAL}}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{\text{VCO}}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2,TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1,C1D2	O	Output pin for indicating the C1 error correction results

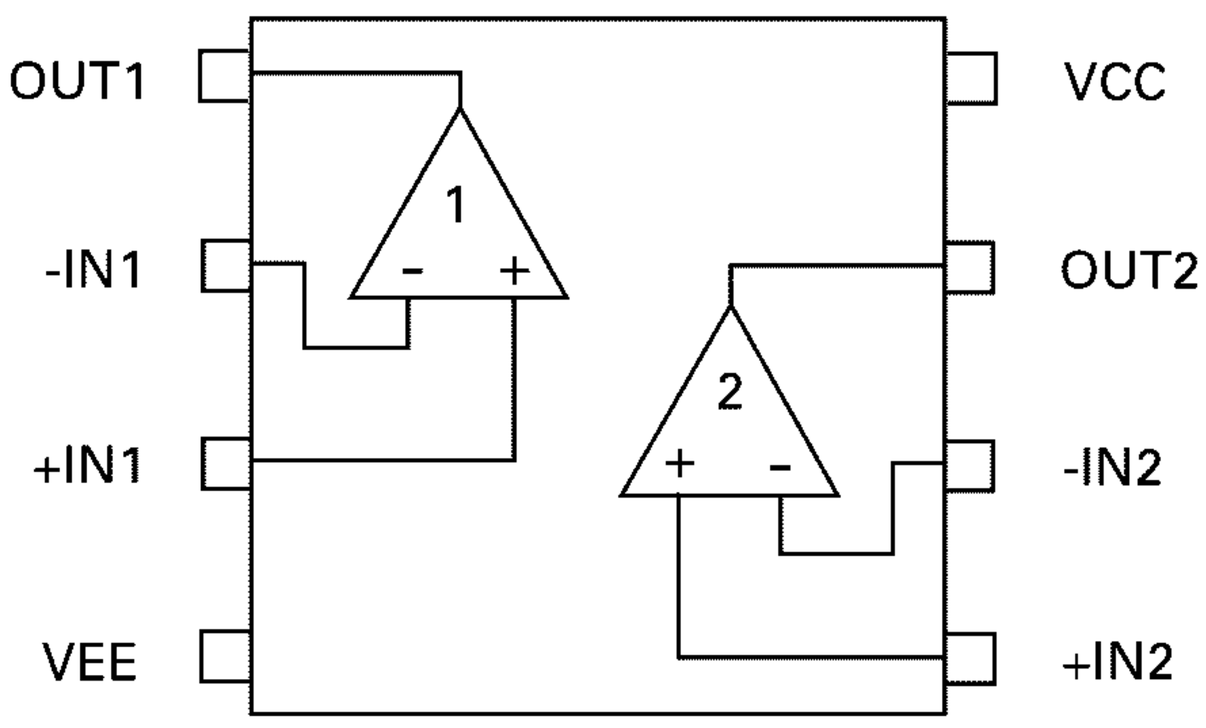
Pin No.	Pin Name	I/O	Function and Operation
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74,75	VR2,1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

*UPD63702AGF

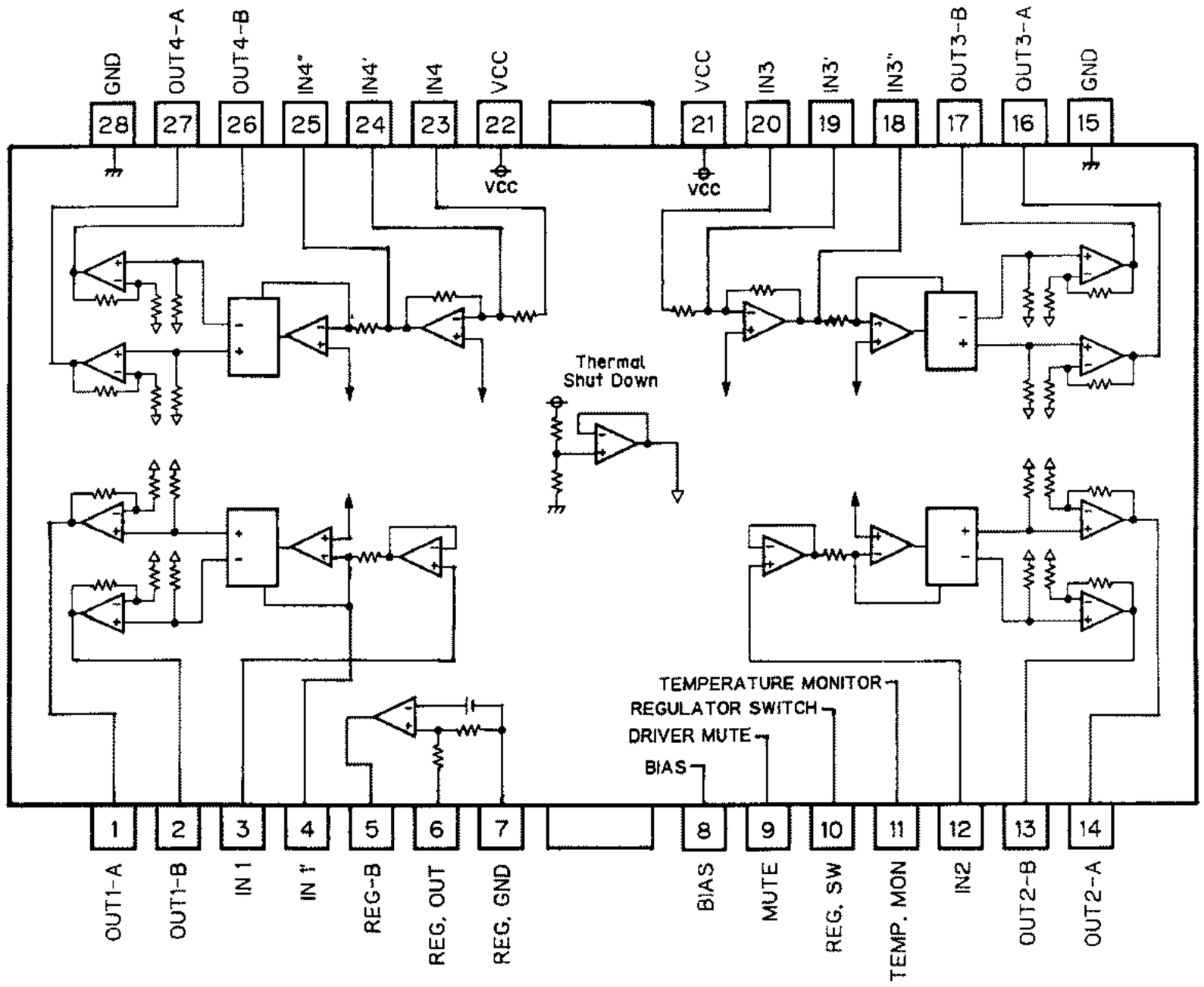


IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induc-

BA4560F



BA6997FM

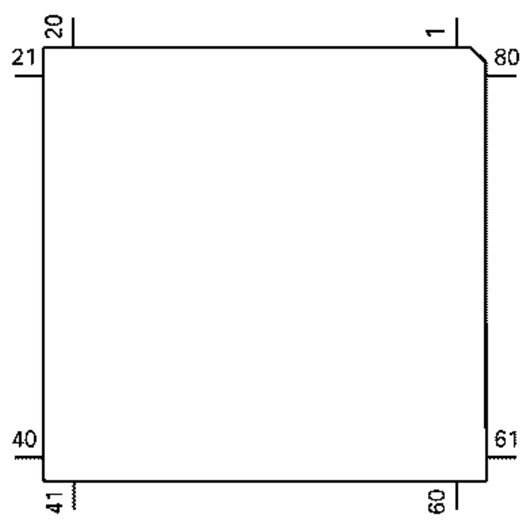


● Pin Functions (PD5397C)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	VDIN	I		Power supply short sensor input
2	NC			Not used
3	PLDT	O	NM	Data output for PLL IC
4	PLCK	O	NM	PLL clock output for PLL IC
5	PLCS	O	NM	PLL chip select output for PLL IC
6	XA0	O	NM	Control signal distinguishing data for CD core unit LSI
7	XSCK	I/O	NM	Clock input/output for CD core unit LSI
8	XSO	O	NM	Data output for CD core unit LSI
9	XSI	I		Data input from CD core unit LSI
10	$\overline{\text{XSTB}}$	O	C	Strobe output for CD core unit LSI
11	$\overline{\text{XRST}}$	O	C	Reset output for CD core unit LSI
12	$\overline{\text{DCE}}$	O	C	Chip enable output for CD core unit compression IC
13	NC			Not used
14	$\overline{\text{ASENS}}$	I		ACC power sense input
15	$\overline{\text{BSENS}}$	I		Back up power sense input
16,17	NC			Not used
18	SYSPW	O	C	System power supply control output
19	DISPPW	O	C	Power supply control output for display IC
20	DPDT	O	C	Display data output
21	KYDT	I		Key data input
22	$\overline{\text{EJSW}}$	I		Eject key switch interrupt input
23	$\overline{\text{MAG}}$	I		Magazine lock switch interrupt input
24	CNVSS			GND
25	$\overline{\text{RESET}}$	I		Reset input
26	POWER	O	C	CD +5V control
27	CONT	O	C	Server driver power control output (CD)
28	XIN	I		Crystal oscillating element connection pin
29	XOUT	O		Crystal oscillating element connection pin
30	VSS			GND

Pin No.	Pin Name	I/O	Format	Function and Operation
31–38	D7-D0	I/O	C	External RAM data line input/output
39	$\overline{WE}$	O	C	External RAM write enable output
40	$\overline{PROT}$	O	C	External RAM output enable output
41	CS	O	C	External RAM chip select output
42,43	NC			Not used
44–54	A10-A0	O	C	External RAM address line output
55	NC			Not used
56	$\bar{6}$/12	I		6/12 switching input
57	NC			Not used
58	MIRR	I		Mirror detection input (CD)
59	LOCK	I		Spindle lock input (CD)
60	FOK	I		FOK signal input (CD)
61	CSEL	I		Compression select input(CD)
62	PREN	O	C	Pre-emphasis select output
63	NC			Not used
64	PRMR	I		Compression display select input
65	I1,3	O	C	Motor driver control output
66	I2	O	C	Motor driver control output
67	I4	O	C	Motor driver control output
68	CDMUTE	O	C	Mute control output (CD)
69	$\overline{ADENA}$	O	C	A/D converter reference voltage output
70	$\overline{TESTIN}$	I		Test program mode input
71	VCC			Power supply terminal
72	VREF			A/D converter reference voltage
73	AVSS			A/D converter GND
74	SIMUKE	I		Destination information input
75	UL	I		ELV position select input
76	$\overline{DISC}$	I		Disc detector input
77	ELVPVO	I		Voltage input from ELV position sense
78	ELVREF	I		ELV reference voltage input
79	MSW	I		Disc sense timing input and tray position input
80	NC			Not used

*PD5397C

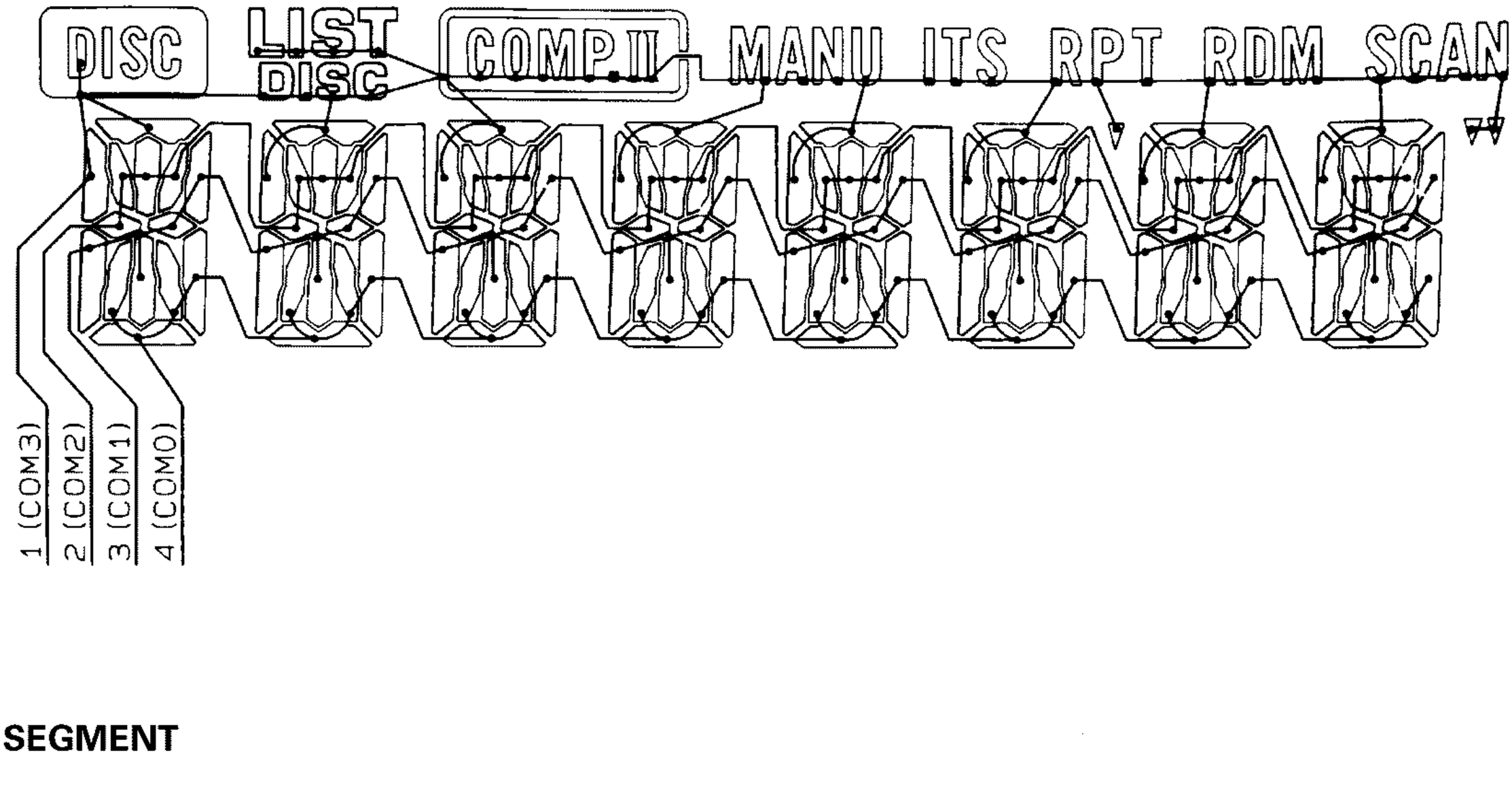


Format	Meaning
C	C MOS
NM	Middle resistivity N channel open drain

7.1.2 DISPLAY

● CAW1273

COMMON



SEGMENT

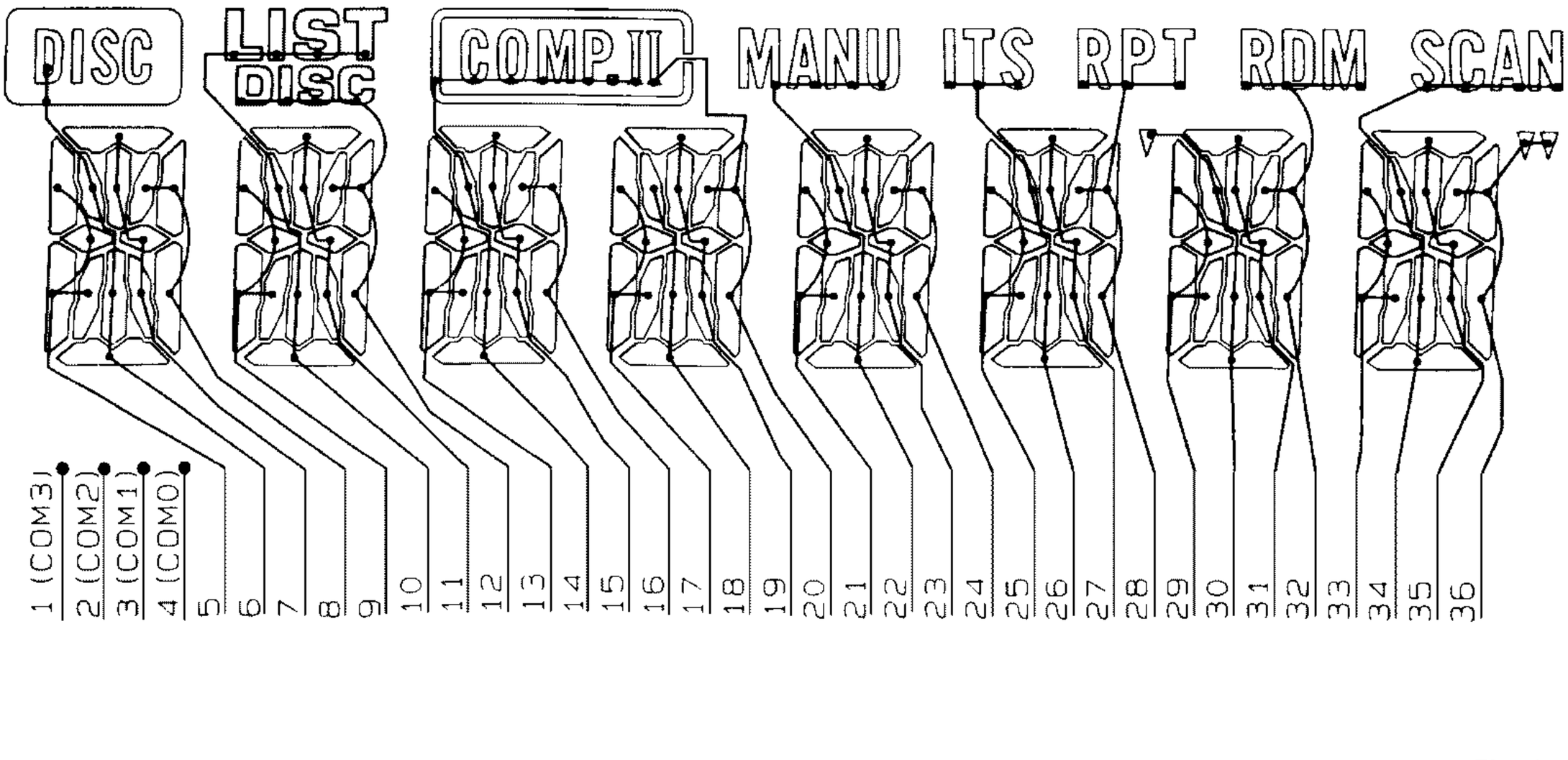


Fig. 27

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Upper Case

1.Remove the nine screws and then remove the upper case.

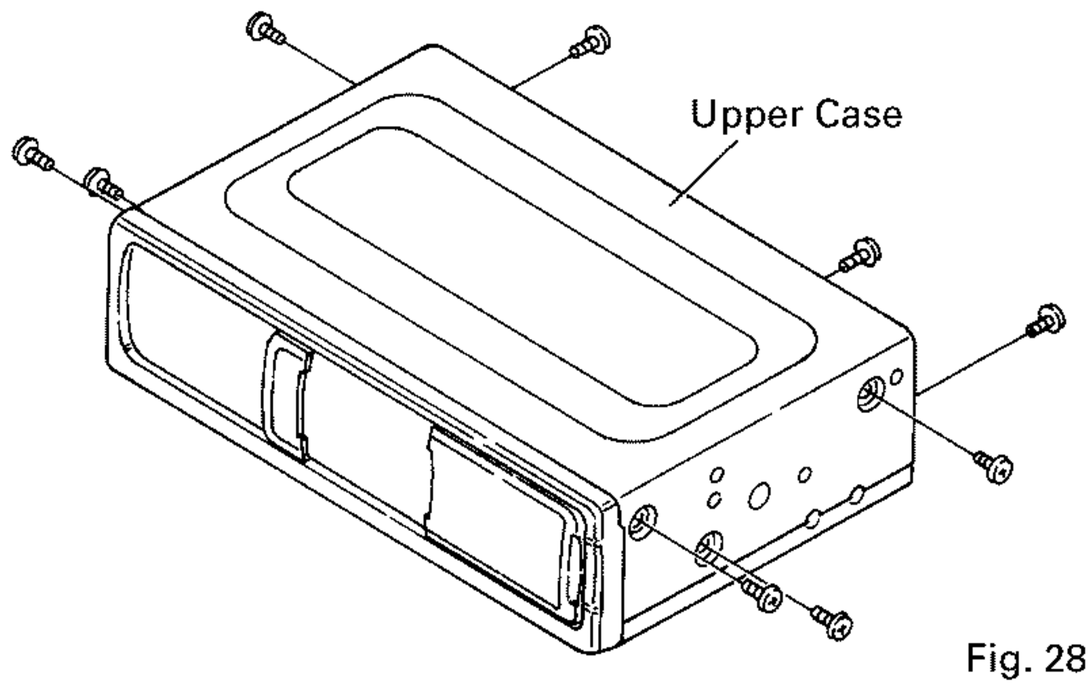


Fig. 28

● Removing the CD Mechanism Module

1.Remove the four dampers.
2.Remove the two springs.
3.Disconnect the connector and then remove the CD mechanism module.

● Removing the Grille Assy

1.Press the two tabs indicated by arrows and then pull out the grille assy.

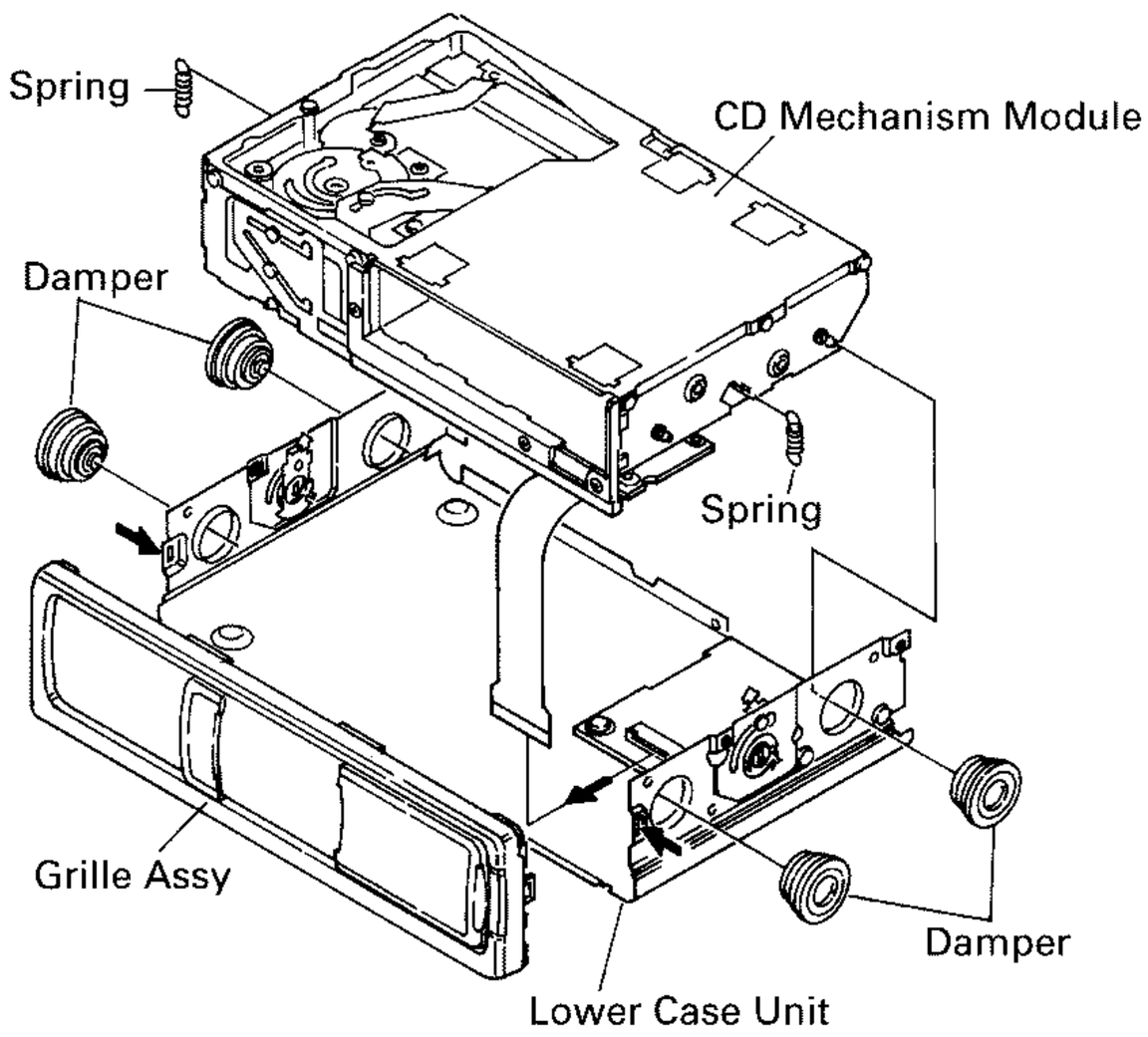


Fig. 29

● Removing the System Unit

1.Remove the two screws A and the screw B.
2. Stretch the claw indicated by arrow and then remove the system unit.

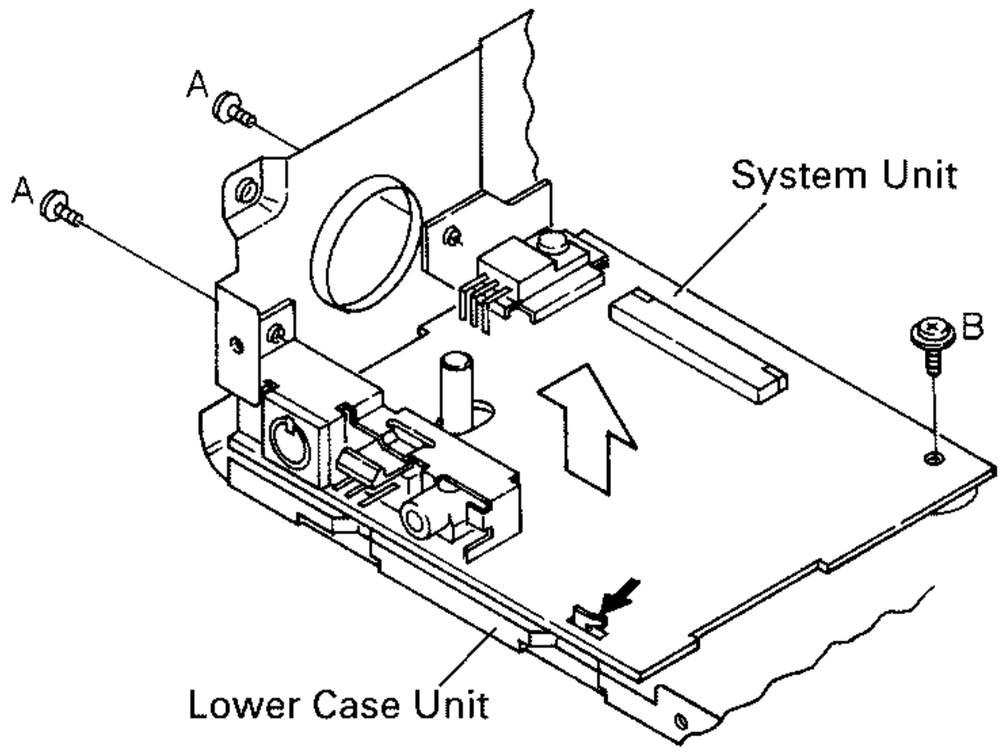


Fig. 30

7.2.2 TEST MODE

1)Precautions

· This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

· Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

· Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

· Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

· Test mode starting procedure
Pressing the DISPLAY POWER and RESET keys together.

· Test mode cancellation
Switch ACC, back-up OFF or pressing the reset key.

· Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
*During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.
*The unit will not load a disc.
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

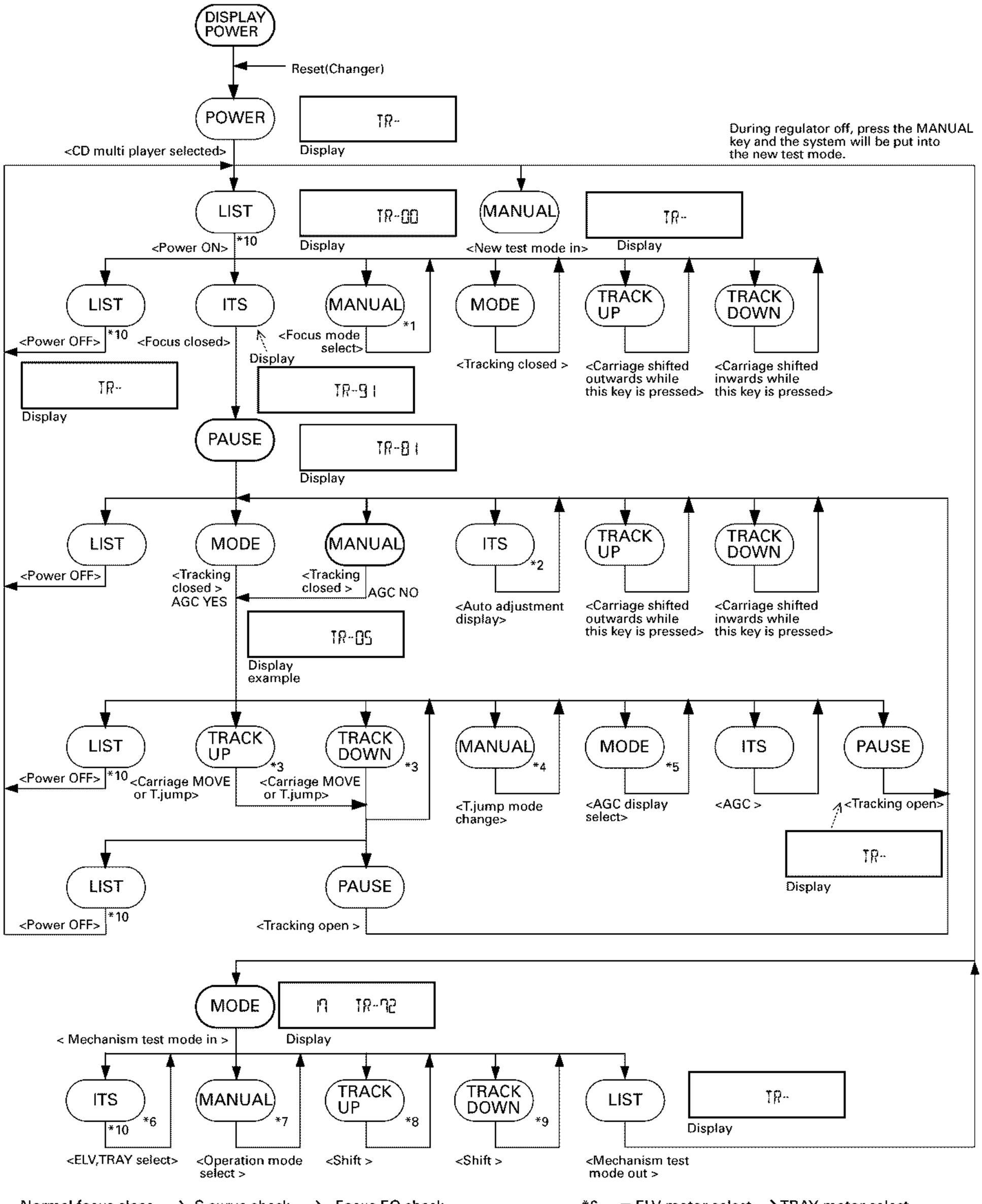
· When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

· Turn power off when pressing the button TRACK UP+ or the button TRACK DOWN- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

· SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

· JUMP MODE resets to SINGLE as soon as power is switched off.

● Flow Chart



*1 Normal focus close (00) → S curve check (01) → Focus EQ check (02) → Normal focus close (00) Display

*2 Normal display → Focus cancel → Tracking offset → Tracking balance (Close spindle-rough) → Normal display

*3 100 TRK jump and carriage MOVE continue only while the keys are released

*4 SINGLE → 4TRK → 10TRK → 32TRK → 100TRK → C.MOVE → SINGLE

*5 Normal display → Focus gain → Tracking gain → Focus bias → Normal display

*6 ELV motor select (17 TR-- 0X) → TRAY motor select (72 TR-- 1X) → ELV motor select Display

*7 8ms pulse drive (17 TR-- 00) → 24ms pulse drive (17 TR-- 01) → DC drive (17 TR-- 02") → 8ms pulse drive Display
48ms pulse drive (17 TR-- 10) → 100ms pulse drive (17 TR-- 11) → DC drive (17 TR-- 12) → 48ms pulse drive Display

*8 ELV select : ELV dowm (Disc 6 to 1)
TRAY select : TRAY out

*9 ELV select : ELV up (Disc 1 to 6)
TRAY select : TRAY in

*10 Press LIST key for more than 2 seconds.

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number)

During the setup, the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 57.

(2) Relations of keys between TEST, NEW TEST and Mechanism TEST Modes

Keys	Test Mode		New Test Mode		Mechanism Test Mode
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated	
LIST	Regulator ON	Regulator OFF	—	Time of occurrence/ cause of error select	back to the test mode
TRACK UP	—	FWD-Kick	FF/TRACK+	—	Playing the mechanism
TRACK DOWN	—	REV-Kick	REV/TRACK-	—	Playing the mechanism
MODE	—	Tracking close	SCAN	—	—
PAUSE	—	Tracking open	MODE	—	—
ITS	—	Focus close	—	—	TRAY/ELV select
MANUAL	To New Test Mode	Jump Mode Select	AUTO/MANU	TRACK No./time of occurrence select	Operation step select

Operations,such as EJECT, CD ON/OFF, etc. are performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail	
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, failed to read subcode

(5) Example of Display.

·SET UP in progress

Auto

TNo.
11

Manual

Min	Sec
11	11

·Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

·Protection/Error upon occurrence

(a)Error number indicated

ERR–xx

Select the display with the LIST key.

(b)Track number indicated

TNo.
10

(c)Absolute time indicated

Min	Sec
40	05

Select the display with the MANUAL key.

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.
This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

·Examples of Display ERR-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Set up failure	Tracking error waveform is too unbalanced (>50%) or level is too small →The pickup unit or tracking error circuitry is N.G.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal
A1	SYSTEM	Mechanism power failure	Mechanism elevation reference voltage is out of prescription →EREF adjustment VR and/or power abnormal
50	MECHANISM	An error upon ejection	MAG switch release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in / out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

* Setup means a series of operations after focusing up to sound output.

7.3 BLOCK DIAGRAM

● SYSTEM

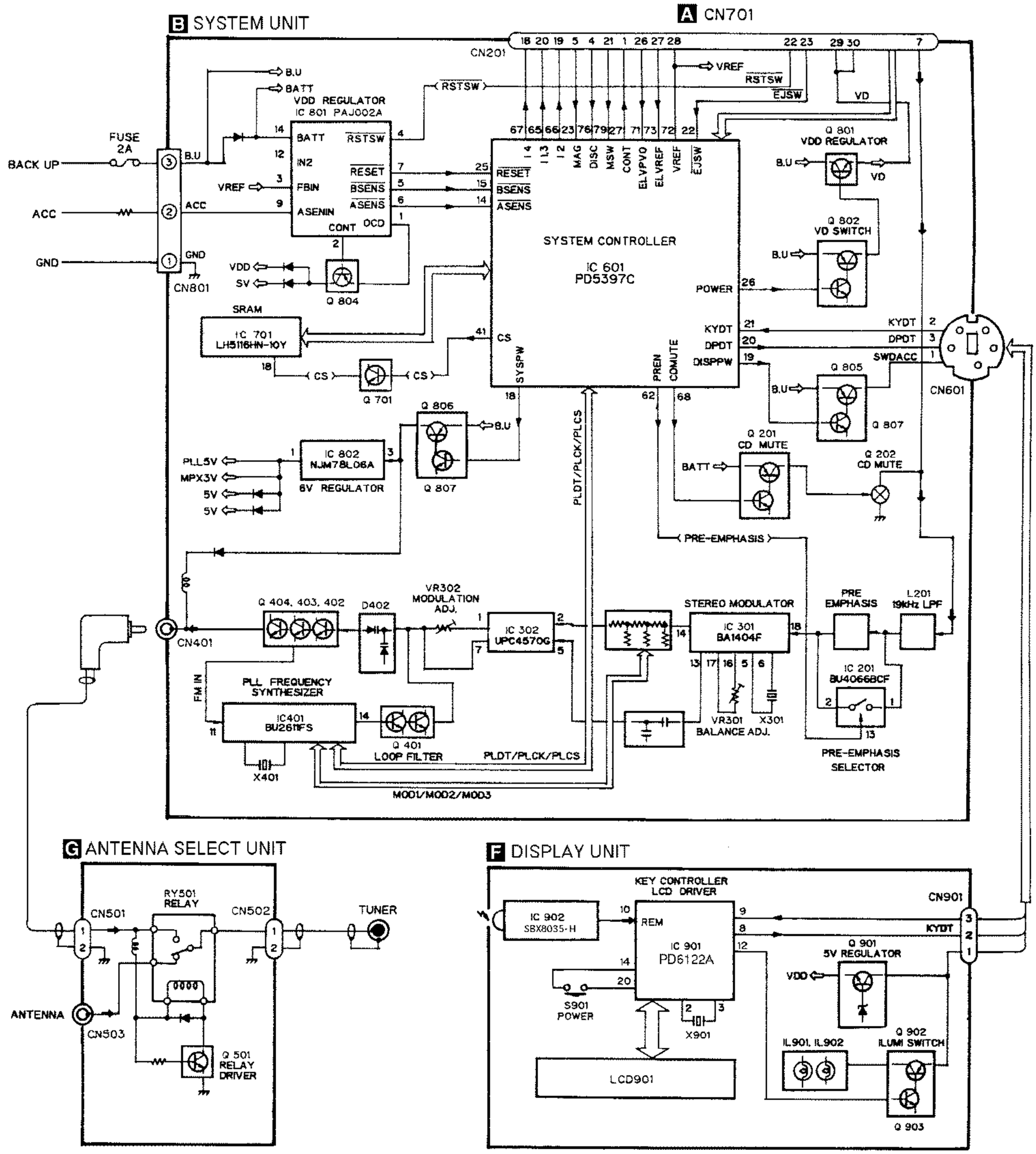


Fig. 31

● CD MECHANISM MODULE

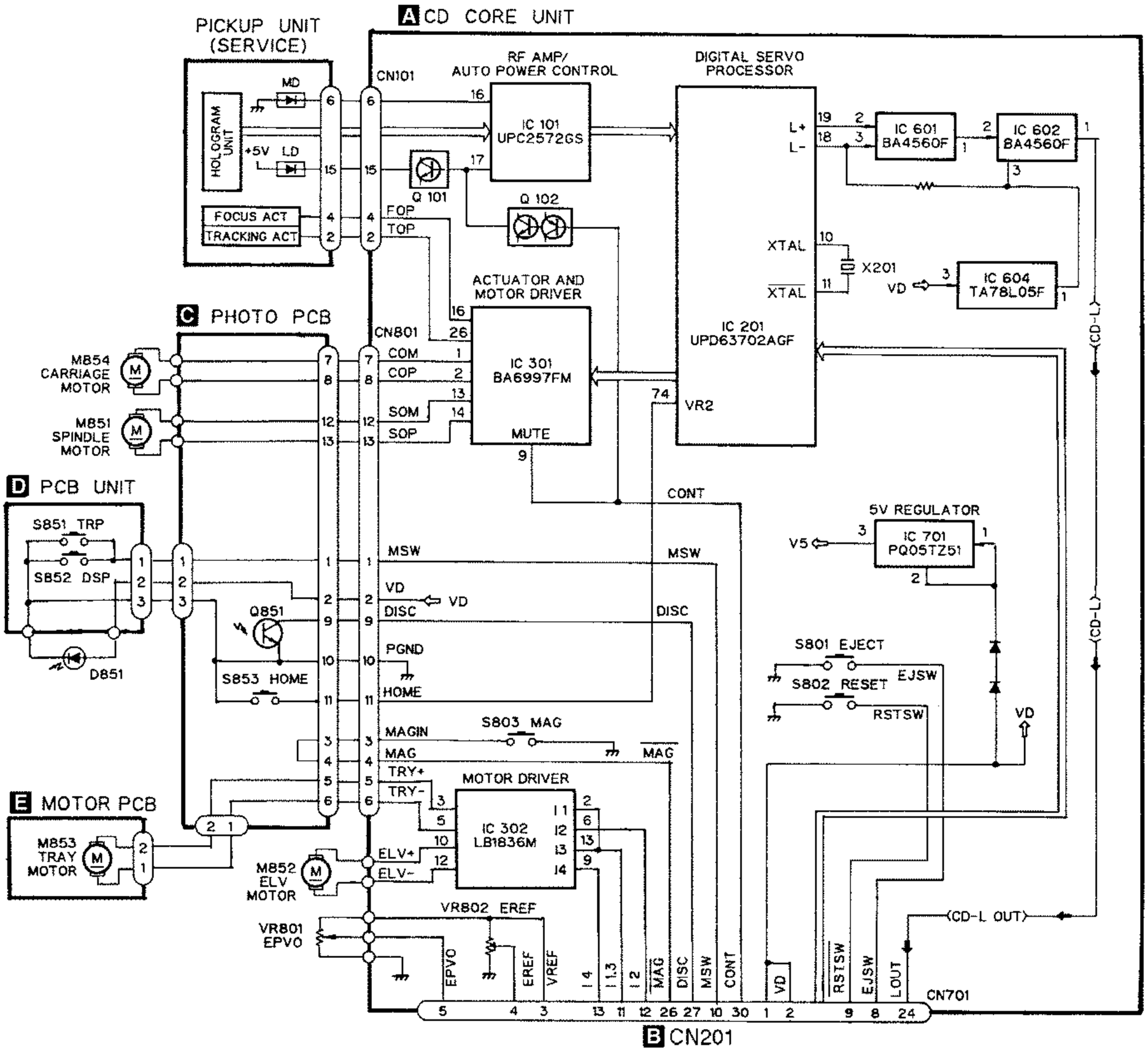
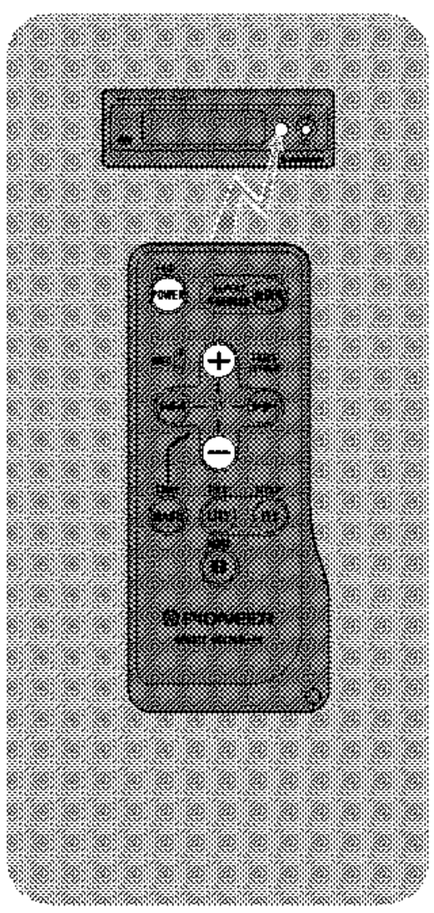


Fig. 32

MC-Service

8. OPERATIONS AND SPECIFICATIONS

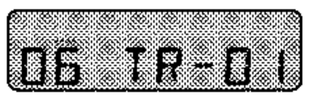
8.1 OPERATION



Start the CD player

1. **Switch the radio on and tune to Modulating Frequencies.**
   - The initial value is 89.1 MHz.
   - If your radio does not have muting, there may be some noise before power switch of control unit is ON. If this happens, turn down the volume of the radio.

POWER or ◯



2. **Press button to switch on and start the player.**

Disc Number Search

⊕ : **increase the number.**

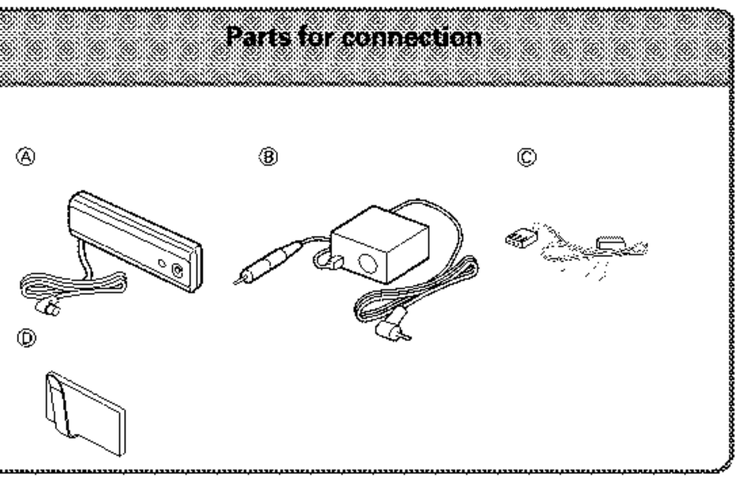
⊕ ⊖

Disc Number

⊖ : **decrease the number.**

Connecting the Units

Parts for connection



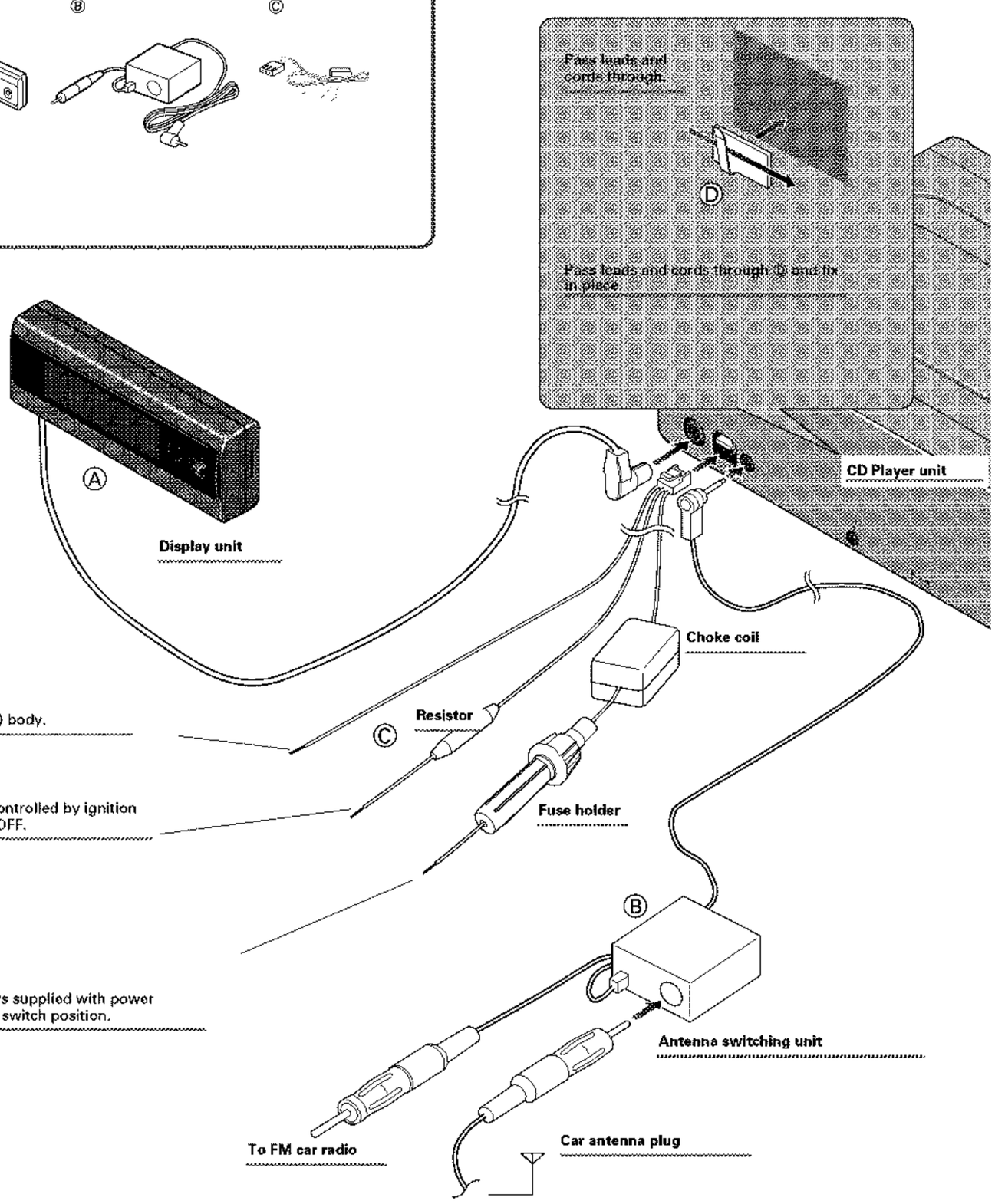


Fig. 33

8.2 SPECIFICATIONS

CD Player unit
System ..... Compact disc audio system
Usable discs ..... Compact Disc
Signal format
..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Power source
..... 14.4 V DC (10.8 — 15.1 V allowable)
Max. current consumption ..... 1.0 A
Weight ..... 1.8 kg
Dimensions
..... 248 (W) × 66 (H) × 162 (D) mm
FM modulator usable frequency
..... 87.9/88.1/88.3/88.5/88.7/88.9/89.1
/89.3/89.5/89.7/89.9/90.1 MHz

Antenna Switching unit
Weight ..... 140 g
Dimensions
..... 45 (W) × 25 (H) × 43 (D) mm

Display unit
Weight ..... 70 g
Dimensions
..... 105 (W) × 35 (H) × 18 (D) mm

Remote Controller unit
Power source
..... Battery (CR2032)
Weight (including battery)
..... 16 g
Dimensions
..... 39 (W) × 92 (H) × 6 (D) mm

Note:
Specifications and the design are subject to possible modification without prior notice due to improvements.

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